Louisiana Department of Wildlife and Fisheries

Marine Fisheries Division

2004

OYSTER STOCK ASSESSMENT REPORT

ON THE PUBLIC SEED GROUNDS,
SEED RESERVATIONS, AND TONGING AREAS

Oyster Data Report Series
No. 10
July, 2004

TABLE OF CONTENTS

Introduction, Historical Data, Maps i

Coastal Study Area I 1

Coastal Study Area II 7

Coastal Study Area III 14

Coastal Study Area V 22

Coastal Study Area VI 40

Coastal Study Area VII 53

Dermo (*Perkinsus marinus*) Analysis 62

INTRODUCTION AND OVERVIEW

The oyster resource in Louisiana is one of the largest and most valuable in the nation. Its value is derived from both the economic benefits it provides to the state and the ecological benefits it provides to the estuarine environment. Due to Louisiana's vast coastal wetland area, ample habitat exists where oysters thrive under a variety of environmental conditions. The Department of Wildlife and Fisheries (LDWF) is charged with managing the oyster resource on the public grounds by closely monitoring the size and health of oysters on approximately 2 million acres of public water bottoms.

Oysters have been a part of the Louisiana economy for many years; starting from meager beginnings and growing into a multi-million dollar industry. In 2003, the dockside value of oysters totaled roughly 33 million dollars and harvest yielded nearly 14 million pounds of meat. Typically, the oyster industry utilizes the public oyster grounds as a source of seed oysters for transplant to private leases (Figure 1). The public grounds, however, also yield a supply of sack-sized oysters and these oysters may be taken directly to market. The manner in which both the public grounds and private leases are utilized in combination helps to keep Louisiana's industry viable. In fact, Louisiana regularly leads the nation in the production of oysters and accounted for an average of 33% of the nation's oyster landings from 1997-2002 (Figure 1).

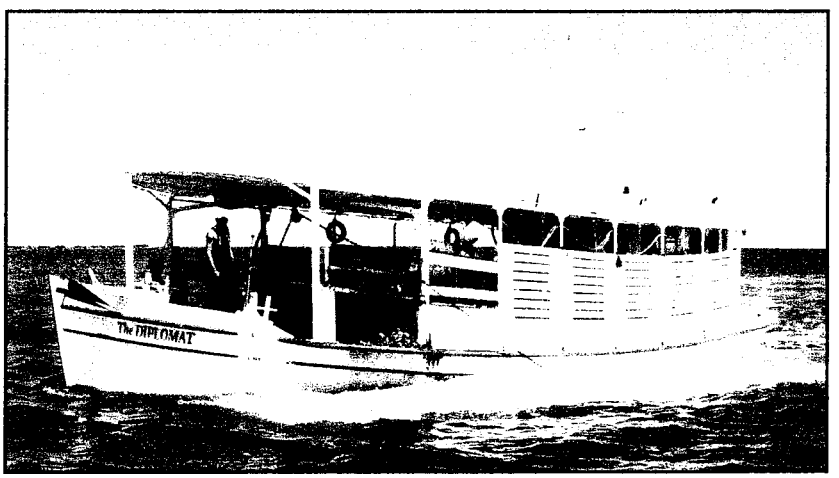
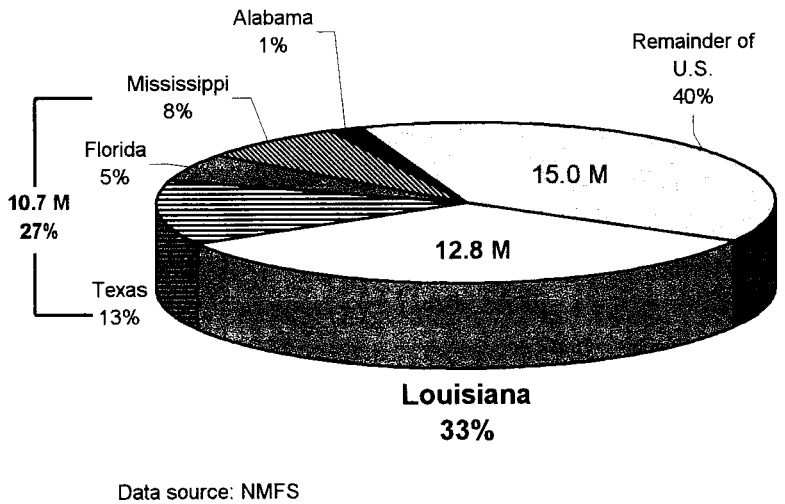


Figure 1. The oyster lugger, The Diplomat, harvests seed oysters from the Sister Lake Public Oyster Seed Reservation during the open season in 2003.

Oysters also play an important ecological role in the estuarine ecosystem. Oyster reefs provide the majority of hard substrate required by other sessile invertebrate species such as barnacles, bryozoans, tunicates, and anemones. Reefs are also utilized as shelter and forage habitat for many species of crabs, worms, fish, and meiofauna. Estuarine water quality can be affected by the filter-feeding activities of oysters and reefs may also play a role in stabilizing shorelines.

Each summer, LDWF biologists from the Marine Fisheries Division perform quantitative evaluation of the oyster resource on the public oyster areas. This biological evaluation includes using SCUBA to collect replicate square meter samples from areas of each public seed ground, seed reservation, and tonging area. The public ground oyster season generally opens in early September and runs through March or April of the following year. Square-meter sampling is conducted each July in order to assess the stock size of the resource and to make

recommendations to the Wildlife and Fisheries Commission for the setting of the oyster season. Although the public oyster areas are managed to provide seed oysters (< 3") for leaseholders to transplant to privately leased areas, the public reefs also yield a supply of sack oysters (≥ 3") that can be sold directly at market.



Data source: NMFS

Figure 2. Average 1997 - 2002 oyster landings (all species combined, pounds of meat).

The Louisiana public ground oyster resource has remained at or above the four million barrel mark since 1992. Although the stock size dropped to 3.8 million barrels in 2003, stocks have rebounded somewhat to over 5.6 million barrels in 2004. Stocks of seed oysters account for much of the increase in overall stock size as those numbers rose 85% from 1.8 million barrels in 2003 to over 3.5 million barrels in 2004. A small increase in sack oyster stocks was also noted, rising 236,545 barrels in 2004 over 2003 estimates (Figure 3).

The public oyster grounds are a strong contributor to overall Louisiana oyster landings each year. This is in sharp contrast to the trend from 1970 – 1992 when the majority of Louisiana oyster landings came from private reefs. Since 1992, however, the public ground stock size has increased, in general, and landings from the public grounds increased as well. Although the trend since 1992 shows an increased reliance of the oyster industry on the public grounds, recent decreases in public ground stock size has lead to decreased harvest from the public grounds in 2003 (Figure 4).

The following report includes both biological and historical production data from each coastal study area (CSA) in Louisiana. Biological data was generated from quantitative square-meter sampling (see above) and production data was generated from boarding runs and trip ticket information. Questions and/or comments can be directed to individual CSA supervisors, Patrick Banks at (225) 765-2370, or Marty Bourgeois at (225) 765-2401.

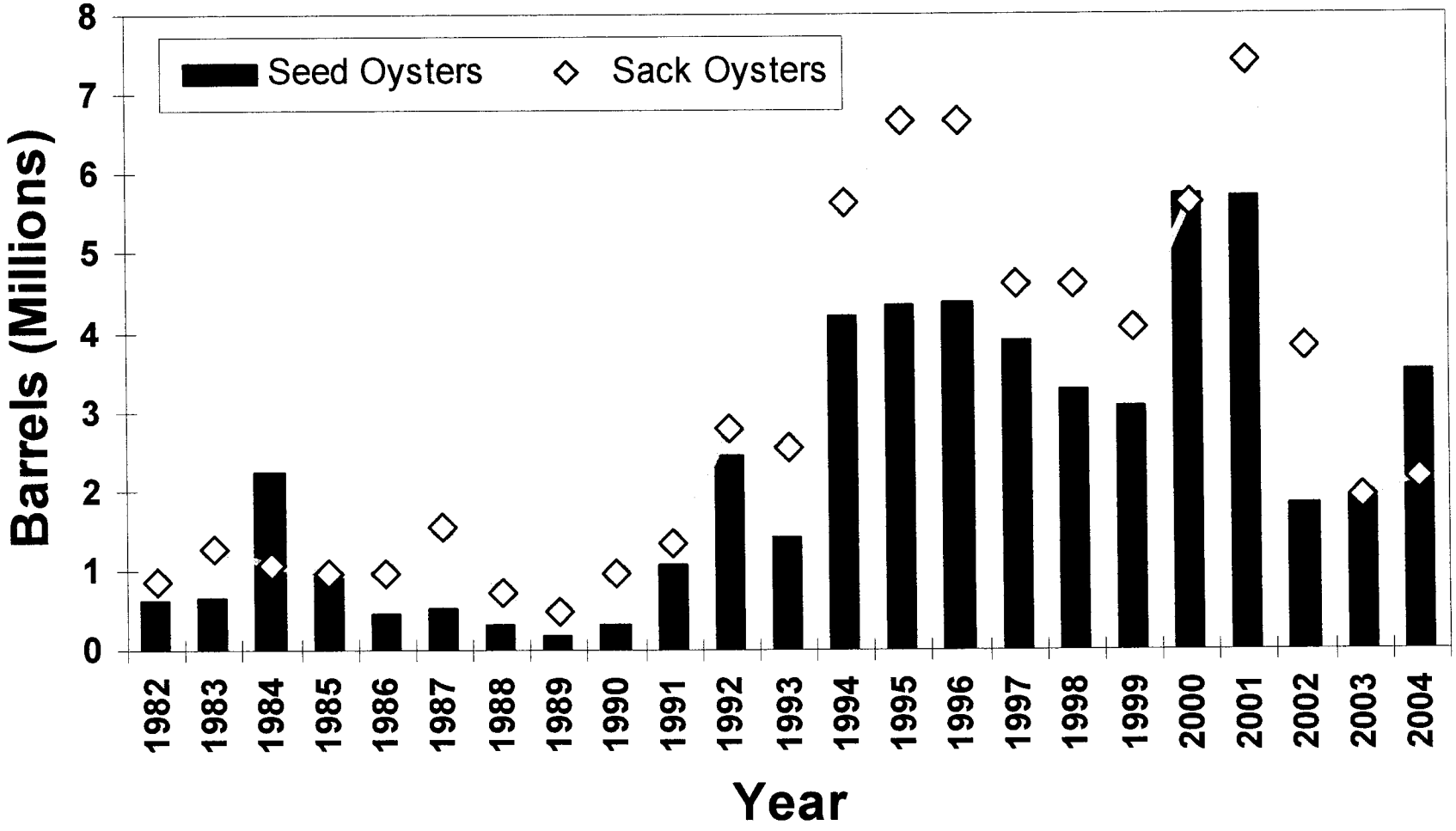


Figure 3. Historical Louisiana oyster stock size (estimated based on square meter sample analysis).

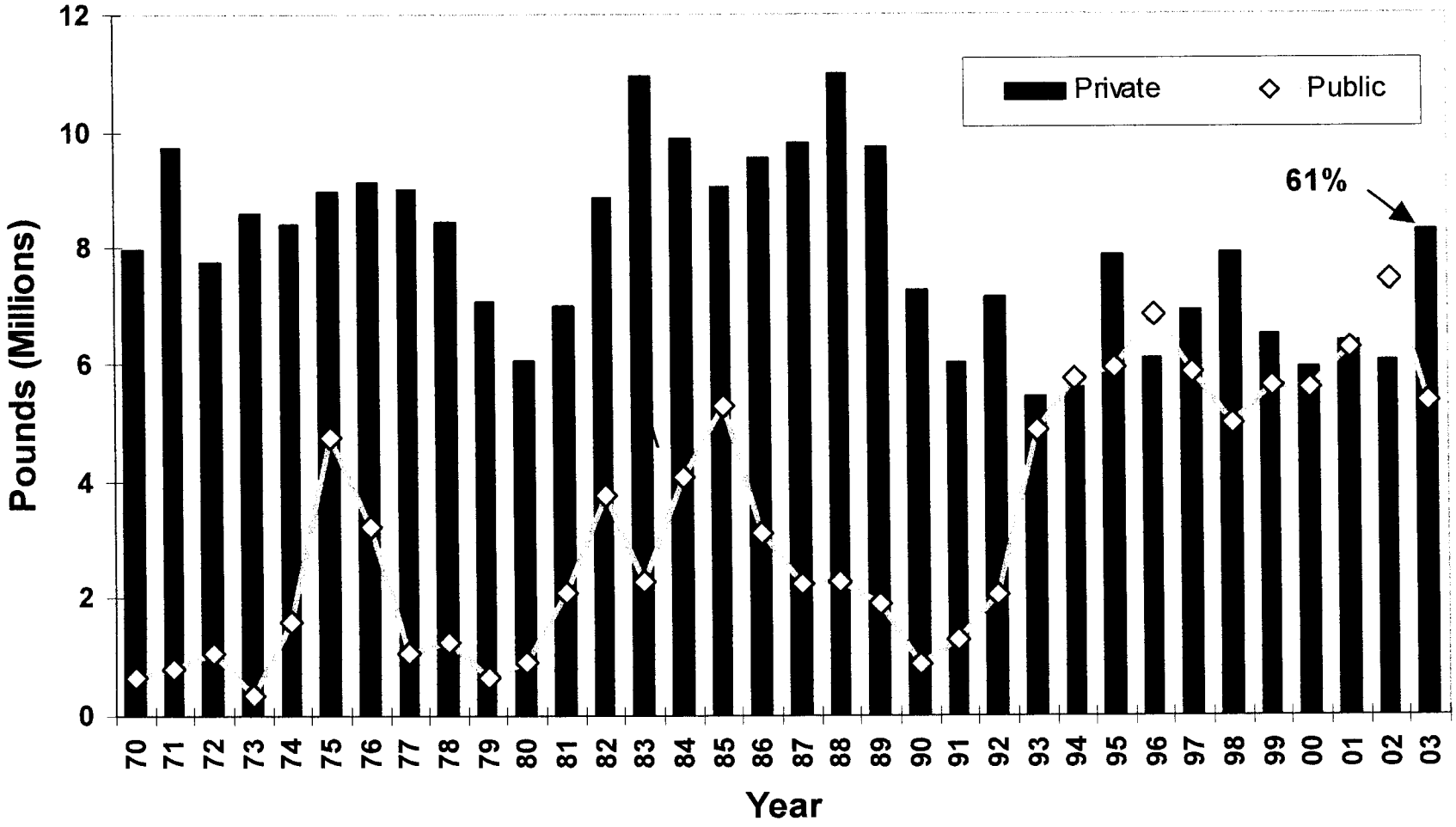
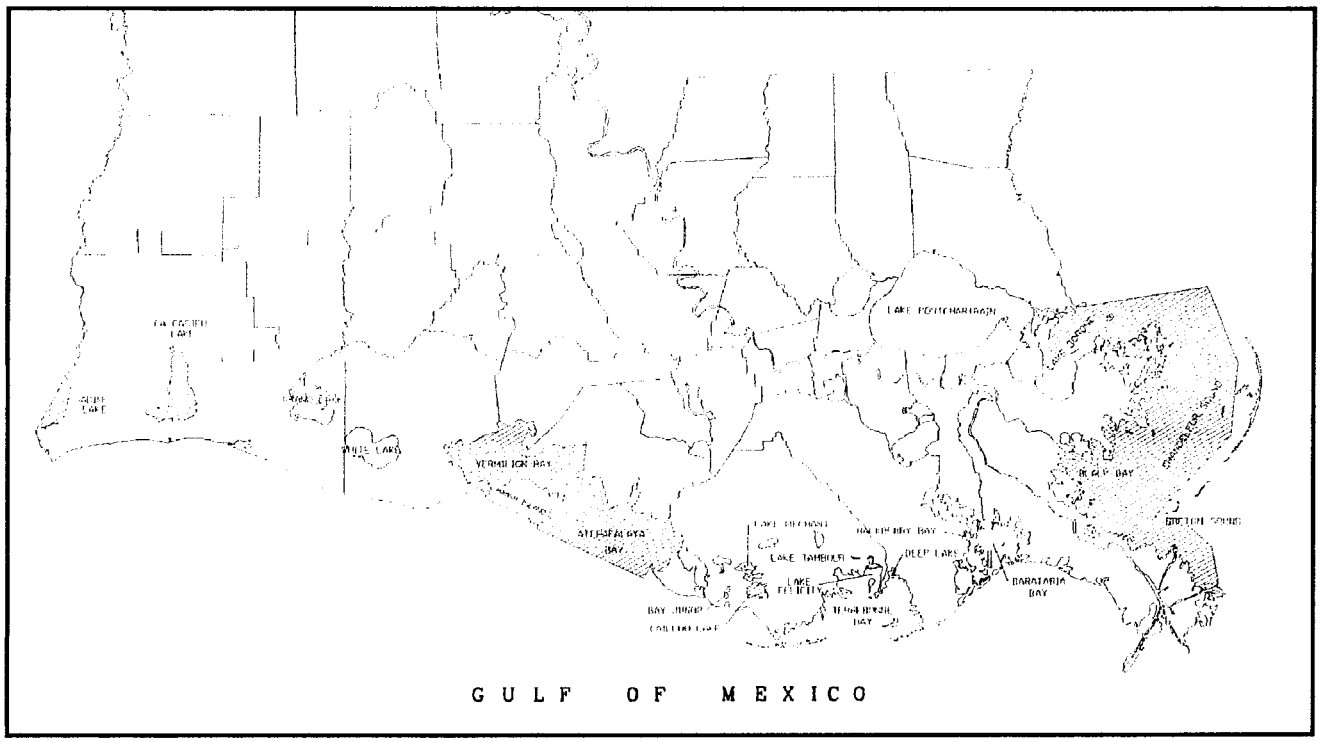


Figure 4. Historical Louisiana oyster landings (NMFS and LDWF data).

Public Oyster Areas



Public Seed Grounds

Lake Borgne
Chandeleur/Breton Sound
(Primary Seed Grounds)
Barataria Bay
Deep Lake
Lake Chien
Lake Felicity
Lake Tambour
Lake Mechant
Vermilion/Cote Blanche/Atchafalaya Bays

Public Seed Reservations

Bay Gardene
Hackberry Bay
Sister (Caillou) Lake
Bay Junop

Public Tonging Areas

Calcasieu Lake
Sabine Lake

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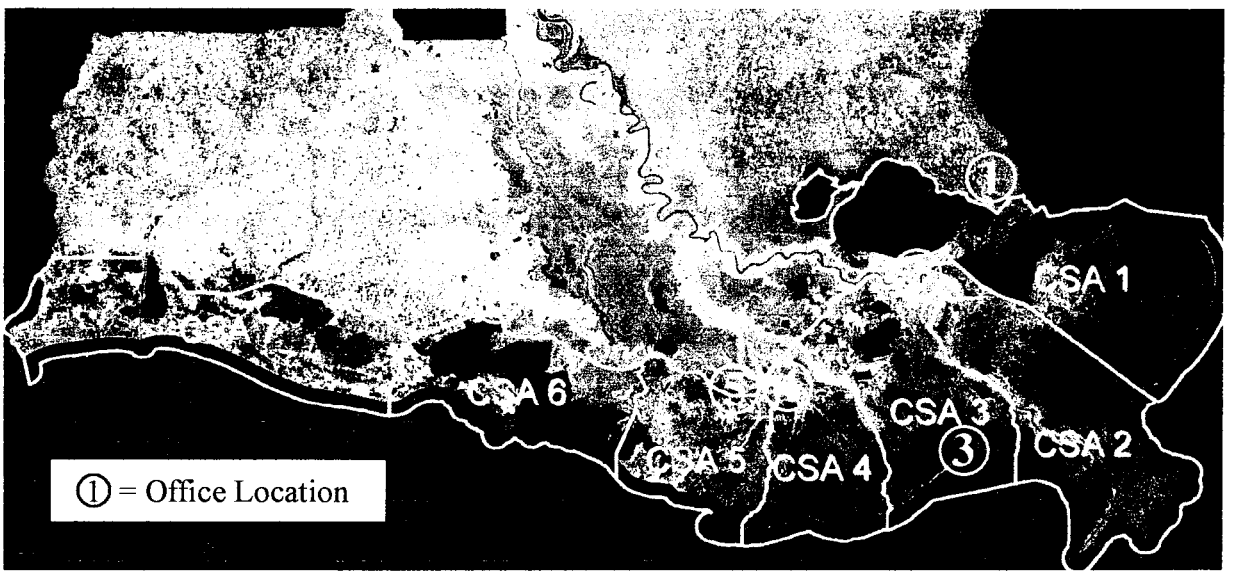
* Seed grounds are designated by the Wildlife and Fisheries Commission. Seed reservations and tonging areas are designated by the state legislature.

LDWF Marine Fisheries' Coastal Study Areas (CSAs)



CSA	*Biologist Supervisor*	*Address*	*Phone Number*	*FAX Number*
1	Keith Ibos	52282 Hwy. 90 Slidell, LA 70461	(985) 646-6441	(985) 646-6481
2	Clarence Luquet	1600 Canal Street New Orleans, LA 70112	(504) 568-5688	(504) 568-2048
3	Brian Hardcastle	P.O. Box 37 Grand Isle, LA 70358	(985) 787-2163	(985) 787-4517
4	Vince Guillory	P.O. Box 189 Bourg, LA 70343	(985) 594-4130	(985) 594-7317
5	Steve Hein	P.O. Box 189 Bourg, LA 70343	(985) 594-7621	(985) 594-7317
6	Paul Cook	2415 Darnall Road New Iberia, LA 70560	(337) 373-0032	(337) 373-0032
7	Michael Harbison	1213 N. Lakeshore Drive Lake Charles, LA 70601	(337) 491-2573	(337) 491-2009

CSA I

State of Louisiana

Dwight Landreneau
Secretary

Department of Wildlife & Fisheries
Post Office Box 98000
Baton Rouge, LA 70898-9000
(225) 765-2800

Kathleen Babineaux Blanco
Governor

MEMORANDUM

TO: Patrick Banks, Biologist Supervisor

FROM: Keith Ibos, Biologist Supervisor
Coastal Study Area 1

SUBJECT: CSA 1 Meter Square Samples 2004

Coastal Study Area 1 completed the 2004 meter square sampling project on June 23. Eleven stations at the following sites were sampled: Cabbage reef, Grand Pass, Turkey Bayou, Three Mile Pass, Half Moon Island, the 2000 Shell Plant, Hospital Wall, Martin Island, Holmes Island, Petit Pass, and Little Grassy Island. A square meter sample with one additional replicate was taken at each site. An average of the two samples and predetermined acreage was used to estimate seed and market oyster stock.

Samples this year indicate current stock of 1,965,408 barrels seed and 1,201,273 barrels sack for a combined total of 3,166,681 barrels. Relative to 2003, seed stock is up by 1,280,332 barrels (187% increase); sack stock is up by 603,797 barrels (101% increase). Compared to the past ten year average (1994-2003), seed availability is up 79%, and sack availability is up 19%.

Overall spat set was low. Spat, present in six of eleven stations, were lower than last year with the exception of Grand Pass and Cabbage Reef. Survival in some areas of the Public Seed Grounds was affected by low salinities.

Adult hooked mussels (*Ischadium recurvum*) were present in the six stations from Petit Island to Turkey Bayou. Large amounts of juvenile mussels were observed in the Grassy Island and Turkey Bayou samples. No mussels were found at Grand Pass or Cabbage Reef.

"Dermo"(*Perkinsus marinus*) samples were collected on July 2, 2004 from Three Mile Pass and Cabbage Reef. Sack and seed size oysters were provided to Dr. John Supan for analysis. The results are not yet available.

Although there were no oyster drills in the Meter Square samples, the oyster drill *Stamonita* (*Thias*) was observed in the Cabbage Reef Dermo samples.

Recent mortality in both seed and sack oysters averaged less than 5 percent across the area. In the Cabbage, Grand Pass, and Turkey Bayou area mortality averaged 1.3% in seed and 4.0% in sack. At Three Mile Pass mortality was 4.7% in seed and 0% in sack. In the Half Moon Island, 2000 Shell Plant, Little Grassy Island, and Petit Pass area mortality averaged 7.2% in seed, and 0 % in sack.

In January of 2004, three additions to the Lake Borgne Public Oyster Seed Grounds were established. Boarding reports were conducted from January through April to monitor the harvest of seed and sack oysters from the area. In those four months an estimated 34,372 sacks of market, and 20,645 barrels of seed were harvested. Dredge sampling was started in the new areas. Square meter samples were not conducted in these areas, as the total acreage has not yet been established. Heavy mussel infestation was observed throughout Lake Borgne.

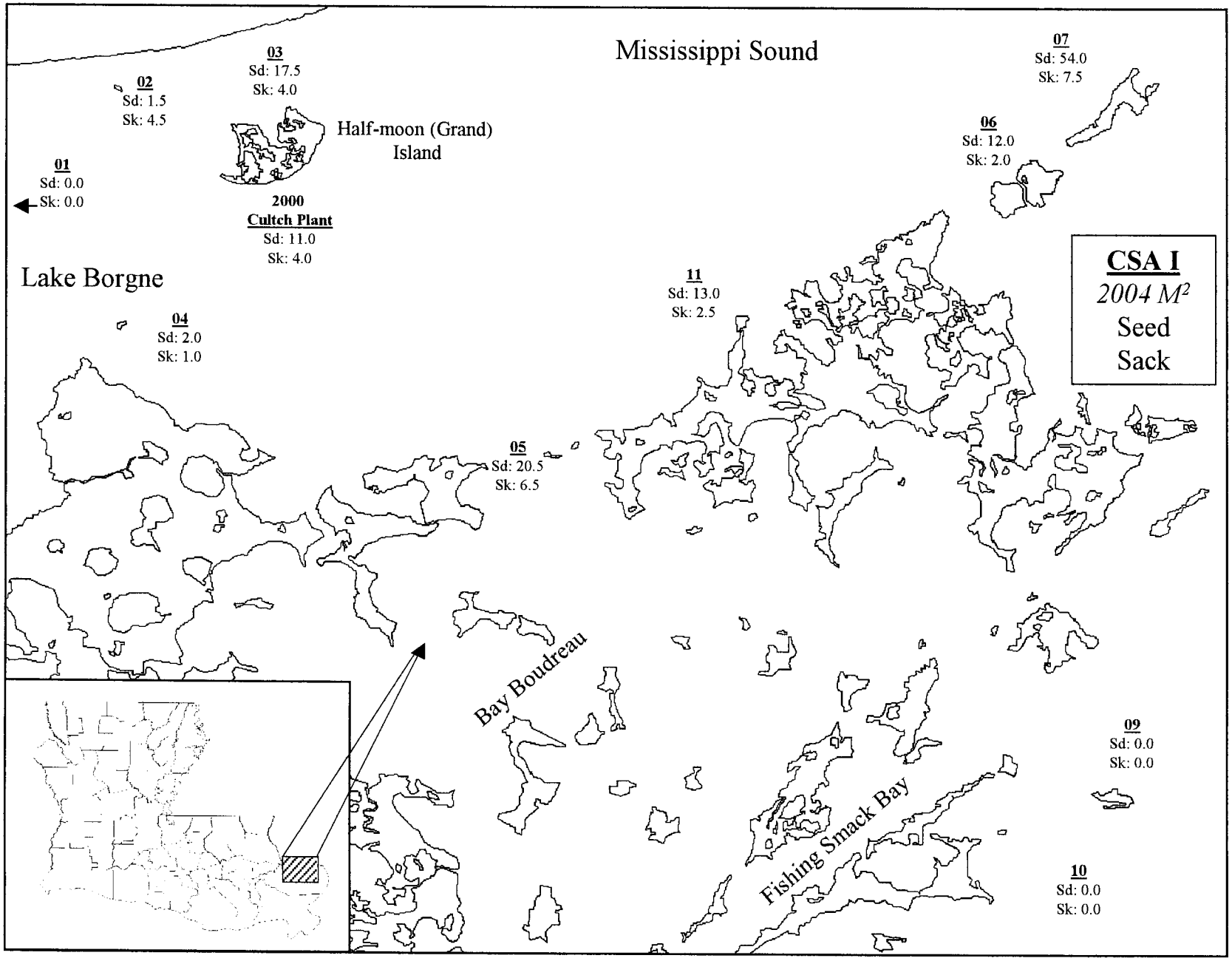

Mississippi Sound
03
Sd: 17.5
Sk: 4.0
02
Sd: 1.5
Sk: 4.5
Half-moon (Grand)
Island
01
Sd: 0.0
Sk: 0.0
2000
Cultch Plant
Sd: 11.0
Sk: 4.0
07
Sd: 54.0
Sk: 7.5
06
Sd: 12.0
Sk: 2.0
Lake Borgne
11
Sd: 13.0
Sk: 2.5
04
Sd: 2.0
Sk: 1.0
CSA I
2004 M²
Seed
Sack
05
Sd: 20.5
Sk: 6.5
Bay Boudreau
09
Sd: 0.0
Sk: 0.0
Fishing Smack Bay
10
Sd: 0.0
Sk: 0.0

Table 1.1. 2004 oyster availability in Coastal Study Area I.

Meter Square Station		Reef Acreage	# Square Meters	Avg Seed Oysters per frame	Avg Sack Oysters per frame	BBLS Seed	BBLS Sack	Mussels	Spat	Drills Present
1	Hospital	376.07	1,521,955.29	0	0	0	0		0	
2	Grassy			1.5	4.5			90A,545J	0	
3	Halfmoon			17.5	4			190A	1	
4	Petit			2	1			210A	0	
2-4		6850.17	27,722,638.00	21	9.5	808,577	731,570			
5	3 Mile	3058.65	12,378,356.55	20.5	6.5	352,439	223,498	21A	2.5	
6	Grand Pass			12	2				10.5	
7	Cabbage			54	7.5				21	
8	Dropped									
11	Turkey			13	2.5			38.5A, 374.5J	6	
6-11		1801.76	7,291,722.72	79	12	800,064	243,057			
9	Martin Is			0	0					
10	Holmes Is			0	0					
9-10		4155.7	16,818,117.9	0	0	0	0		0	
	Lake Pont	631.27	2,554,749.69	0	0	0	0		0	
	2000 Shell Plant	70	283,290	11	4	4,328	3,148	82.5A, 0.5J	0.5	
				Totals		**1,965,408**	**1,201,273**			
				Combined		**3,166,681**				

Adult mussels (> 15mm) indicated as average number per frame followed by the letter "A"
Juvenile mussels indicated as average number frame followed by the letter "J"
Numbers do reflect availability in Lake Borgne.

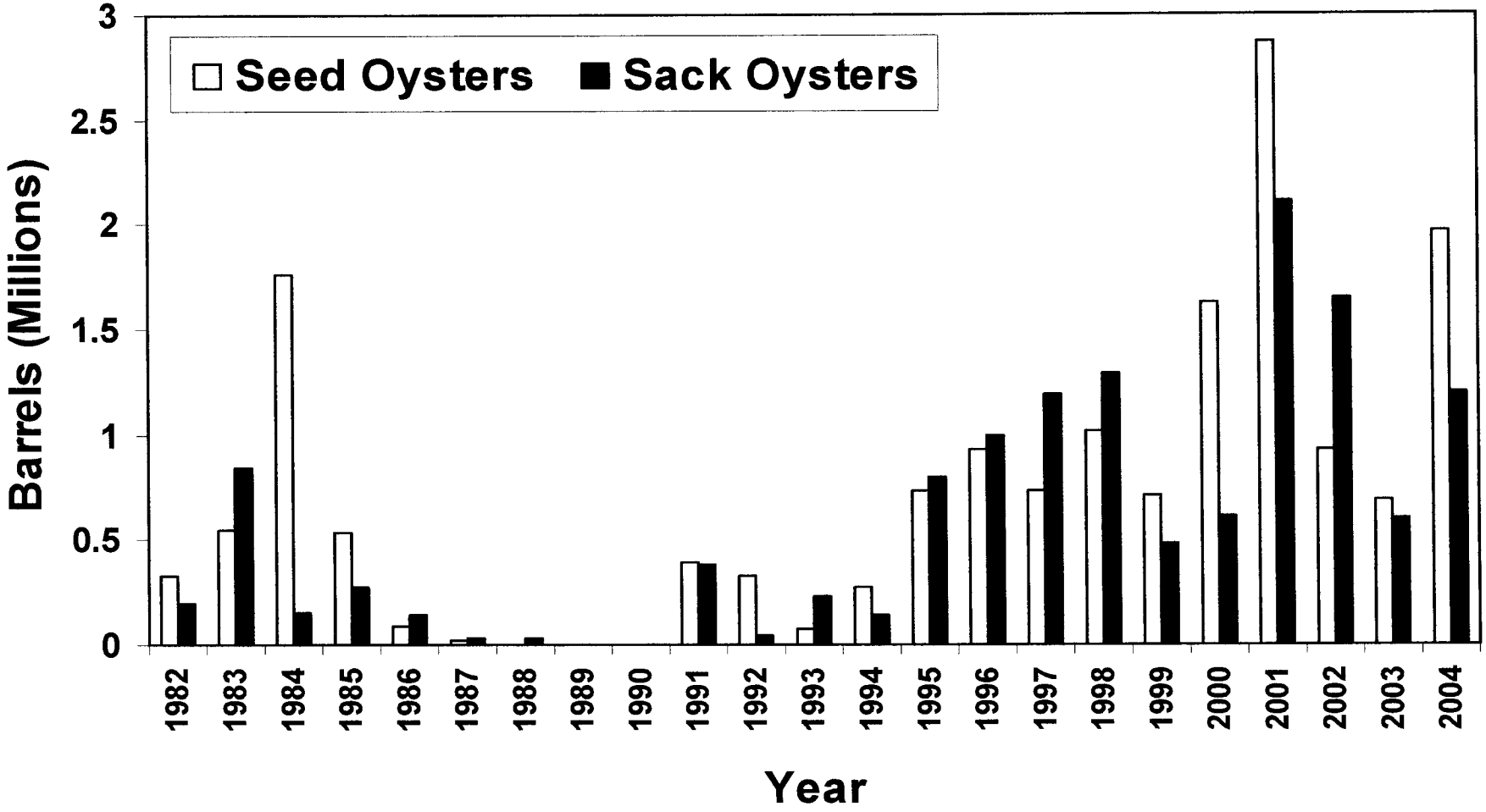


Figure 1.1. Historical Coastal Study Area I oyster stock size (estimated based on square meter sample analysis).

CSA II

State of Louisiana

DEPARTMENT OF WILDLIFE AND FISHERIES

1600 CANAL STREET
New Orleans, LA 70112
(504) 568-5685

Kathleen Blanco
Governor

Dwight Landreneau
Secretary

M E M O R A N D U M

TO: **Patrick Banks, Biologist Supervisor, Oyster Program**

FROM: **Clarence Luquet, Biologist Supervisor, Coastal Study Area II**

DATE: **July 19, 2004**

SUBJECT: **CSA II Meter Square Samples *2004***

Personnel from Coastal Study Area II completed the 2004 meter square sampling project on July 8, 2004. A total of 29 stations were sampled from Bay Gardene and Northern Black Bay to Breton Sound. We found 748,556 barrels of seed oysters and 370,394 barrels of sack oysters for a total of 1,119,151 barrels overall.

The overall availability is down 18 percent from last year and down 67% of last 10 years' average. Relative to last year, the stock of seed oysters is down by 50,898 barrels (6 %), while sack oyster availability is down by 196,424 barrels (35 %). Seed oyster availability is still well below the average for the 1990's: down 64 % of the 10 year average. Sack oysters are also below the average of the last ten years (down 74 %). Unfortunately for those bedding, the majority of the remaining seed oysters are located in the sacking only area. On the other hand those oysters should be available for sacking next year.

Seed oysters may be found on Bay Crabe and Bay Gardene reefs. In addition, there were an adequate number in Black Bay and on the reefs in the vicinity of Iron Banks. Sack oyster numbers are down again but they are available on the same reefs as the majority of seed and south of Stone Island and into California Bay, in pockets.

The results of this year's Dermo (*Perkinsus marinus*) sampling are included in a separate section of the 2004 Stock Assessment Report.

Mussel numbers were significantly lower on most reefs though still dense enough to be a problem on the California Bay area reefs. These were unfortunately most common on the same California Bay area reefs, and southern Black Bay areas, where the majority of our sack oyster resource remains.

Mortalities (recent) in SEED and SACK oysters averaged less than 5 percent across the area.
We recently confirmed reports that there were on-going mortalities in Quarantine Bay and will be

rechecking these reefs and those in the area of California Point. Drills (*Stramonita* adults and *Neverita* juveniles) were found on reefs in the vicinity of Stone Island and Iron Banks

Young spat (less than one month old) were present at 18 of our 29 stations. The highest occurrences were in Bay Gardene.

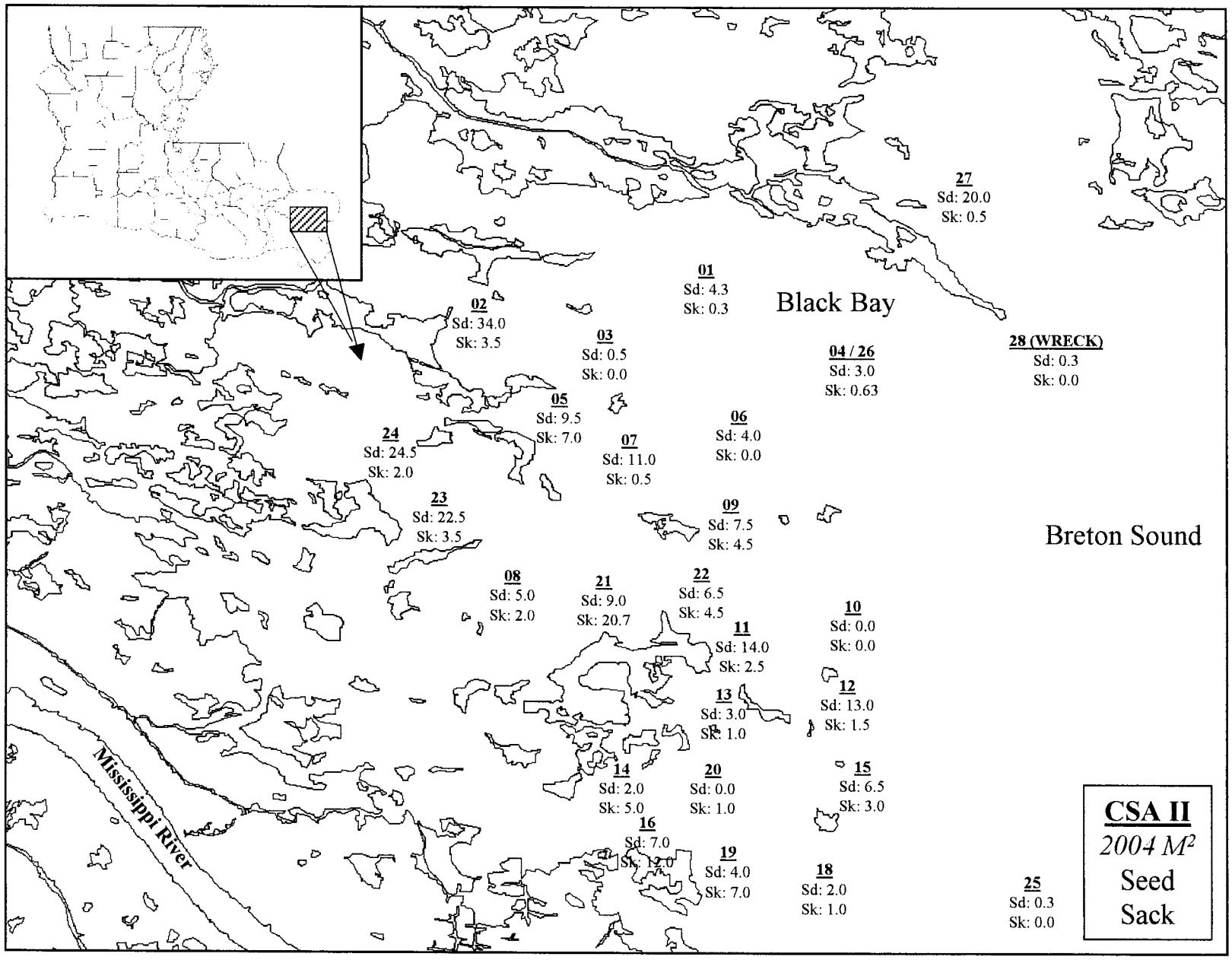

Black Bay
Breton Sound
Mississippi River
01
Sd: 4.3
Sk: 0.3
02
Sd: 34.0
Sk: 3.5
03
Sd: 0.5
Sk: 0.0
04 / 26
Sd: 3.0
Sk: 0.63
05
Sd: 9.5
Sk: 7.0
06
Sd: 4.0
Sk: 0.0
07
Sd: 11.0
Sk: 0.5
08
Sd: 5.0
Sk: 2.0
09
Sd: 7.5
Sk: 4.5
10
Sd: 0.0
Sk: 0.0
11
Sd: 14.0
Sk: 2.5
12
Sd: 13.0
Sk: 1.5
13
Sd: 3.0
Sk: 1.0
14
Sd: 2.0
Sk: 5.0
15
Sd: 6.5
Sk: 3.0
16
Sd: 7.0
Sk: 12.0
18
Sd: 2.0
Sk: 1.0
19
Sd: 4.0
Sk: 7.0
20
Sd: 0.0
Sk: 1.0
21
Sd: 9.0
Sk: 20.7
22
Sd: 6.5
Sk: 4.5
23
Sd: 22.5
Sk: 3.5
24
Sd: 24.5
Sk: 2.0
25
Sd: 0.3
Sk: 0.0
27
Sd: 20.0
Sk: 0.5
28 (WRECK)
Sd: 0.3
Sk: 0.0
CSA II
2004 M²
Seed
Sack

Table 2.1. 2004 square meter sample results for Coastal Study Area II.

Stations	Grids	Approx. Reef Acres	Square Meters	Average # of Seed Oysters/m^2	Average # of Sack Oysters/m^2	Barrels of Seed Oysters Available	Barrels of Sack Oysters Available	Hooked Mussels	Oyster Spat/m^2	Oyster Drill Presence	Seed Oyster Percent Mortality	Sack Oyster Percent Mortality
1	Snake	506	2,047,782	4.3	0.33	12,315	1,877	665	0.3		7.1	0
2	Jessie	59	283,773	34	3.5	13,400	2,759	170.5A	17		4.2	0
3	N. Lonesome	896	3,626,112	0.5	0	2,518	0	467.5	0		0	NA
5	Bayou Lost	118	477,546	9.5	7	6,301	9,286	9.5	0.5		5	0
6	Lonesome	716	2,897,652	4	0	16,098	0	438J 49A	0		0	NA
7	Black Bay	301	1,218,147	11	0.5	18,611	1,692	46.5A	1.5		4.3	0
8	W. Bay Crabe	501	2,027,547	5	2	14,080	11,264	23.0A	1.3		11.8	0
9	Stone	461	1,865,667	7.5	4.5	19,434	23,321	4,444J	6.5	yes*	0	0
10	S. Black Bay	145	586,815	0	0	0	0	15	0.5		NA	NA
11	Elephant	339	1,371,933	14	2.5	26,676	9,527	15.0J	0.5		0	0
12	Curfew	425	1,719,975	13	1.5	31,055	7,167	1,623J	0.5	yes*	0	0
13	N. California	109	441,123	3	1	1,838	1,225	20.0A	0.5		0	0
14	California	7	28,329	2	5	79	393	75.0A	0.5		20	0
16	Sunrise	174	704,178	7	12	6,846	23,473	331.0A	0		0	5.3
17 SKIP		659	2,666,973			private leases discontinued						
19	Mangrove	937	3,792,039	4	7	21,067	73,734	1227.5	0		0	0
20	W. Pelican	293	1,185,771	0	1	0	3,294	5,158.5J	0		NA	0
21	Bay Crabe	659	2,666,973	9	20.7	33,337	153,351	1.0A	0.7		10	0
22	E. Bay Crabe	122	493,734	6.5	4.5	4,457	6,172	12.0A	1		0	10
23	E. Gardene	28	113,316	22.5	3.5	3,541	1,102	43.5J 86.5A	2		0	0
24	Bay Gardene	69	279,243	24.5	2	9,502	1,551	347.5J	67.5		0	0
4,26,29	N. Black Bay	315	1,274,805	3	0.63	5,312	2,231	38.9	0.6		0	0
15	Telegraph	127	513,969	6.5	3	4,640	4,283	4,300A	1		0	0
18	E. Pelican	1,528	3,164,754	2	1	8,791	8,791	210.0J	0		0	0
26 SKIP	see 4,26					combined data						
25	Battledore	1419	5,742,693	0.3	0	2,393	0	0	0		0	NA
27	L Fortuna	4288	17,353,536	20	0.5	482,043	24,102	9	1	**	2.4	0
28	Wreck	2276	9,210,972	0.3	0	4,222	0	47.7A	0		50	NA
Sub Total						**748,556**	**370,594**					
ALL TOTAL						***1,119,151***						

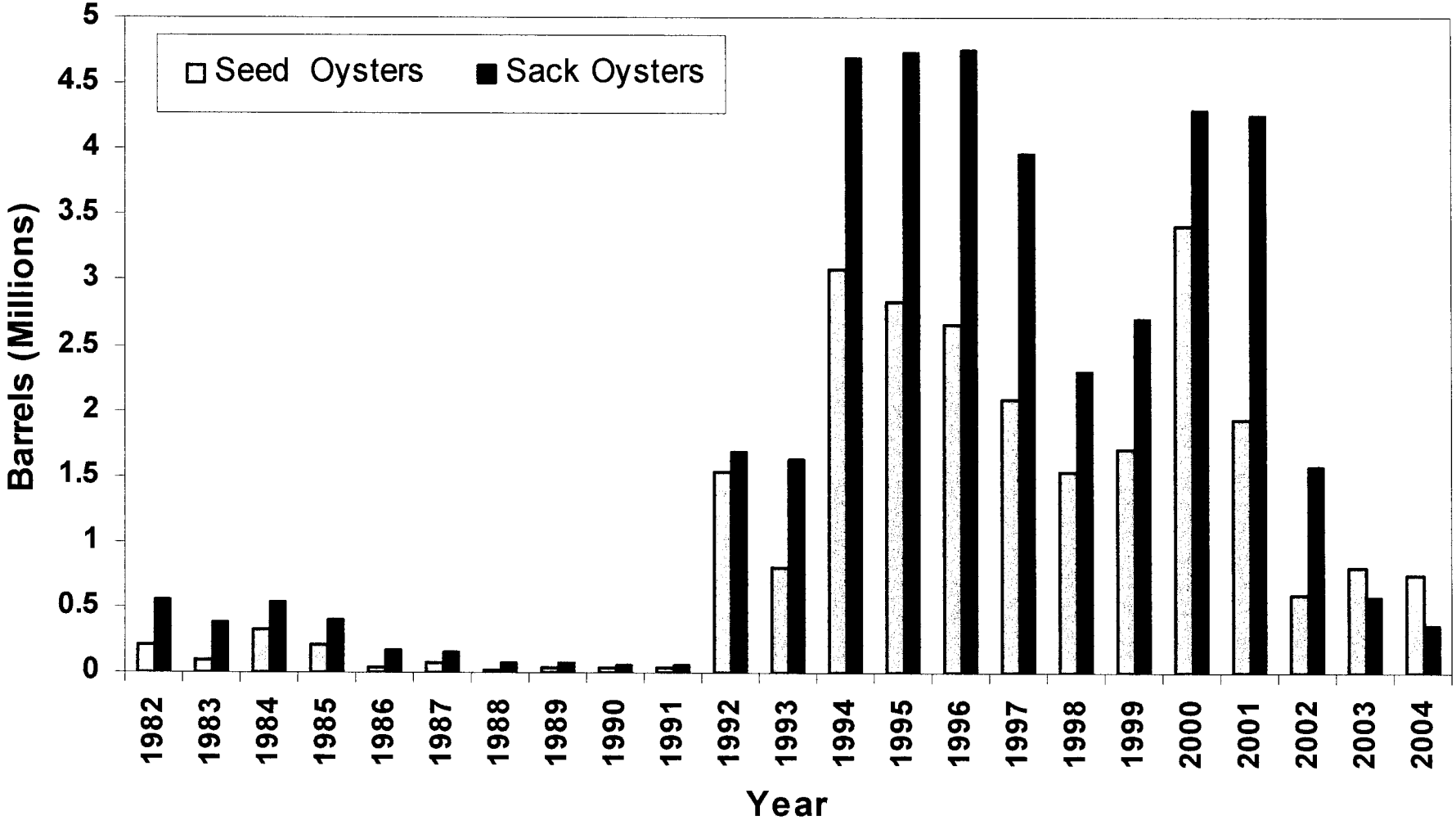


Figure 2.1. Historical Coastal Study Area II oyster stock size (estimated based on square meter sample analysis).

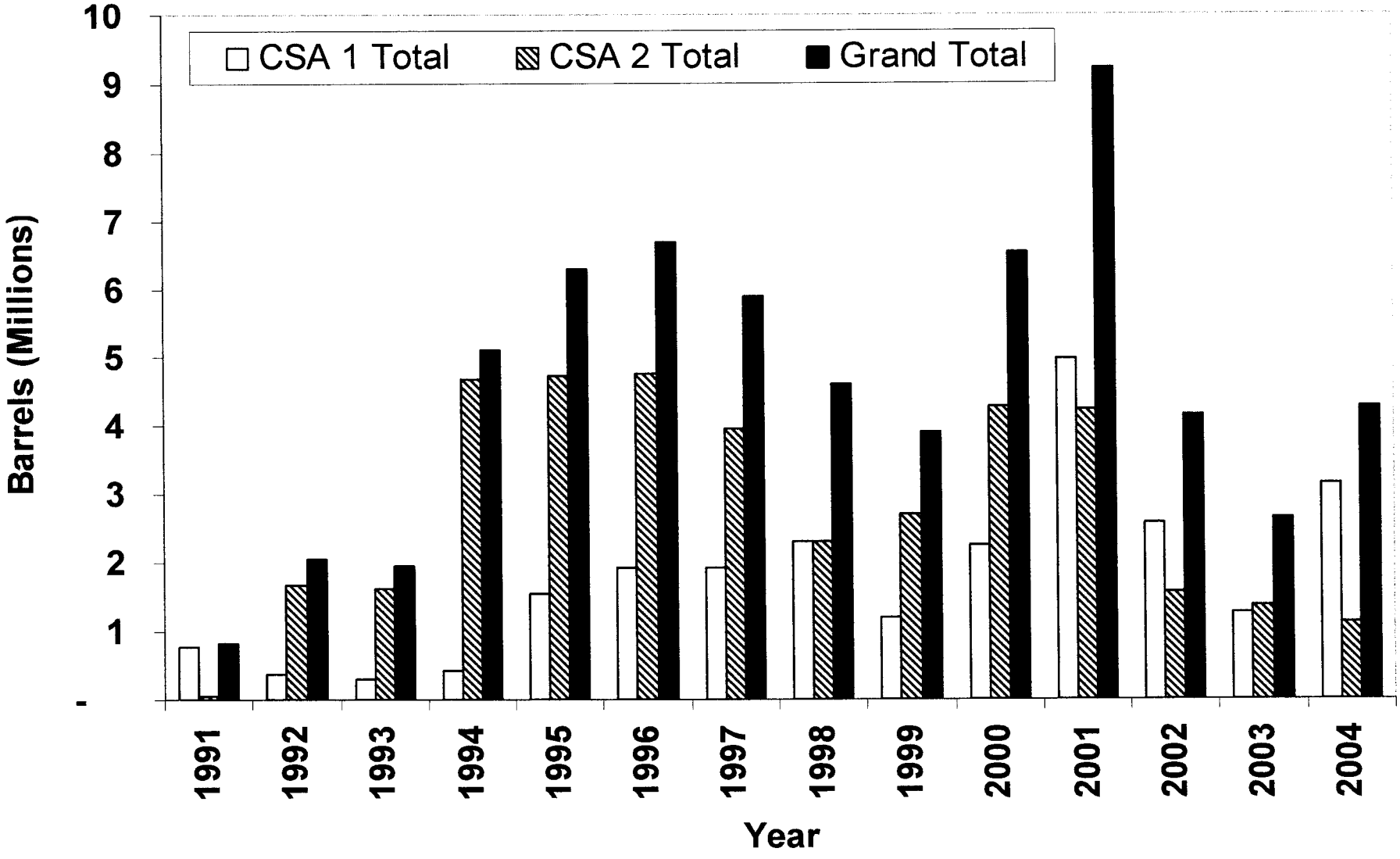


Figure 2.2. Oyster availability on public grounds east of the Mississippi River (seed and sack combined, estimated based on square meter sample analysis).

CSA III

State of Louisiana

Dwight Landreneau
Secretary

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(985) 787-2163

To: Patrick Banks, Biologist Supervisor, Mollusc Program

From: John Dameier, Biologist Manager

Date: July 19, 2004

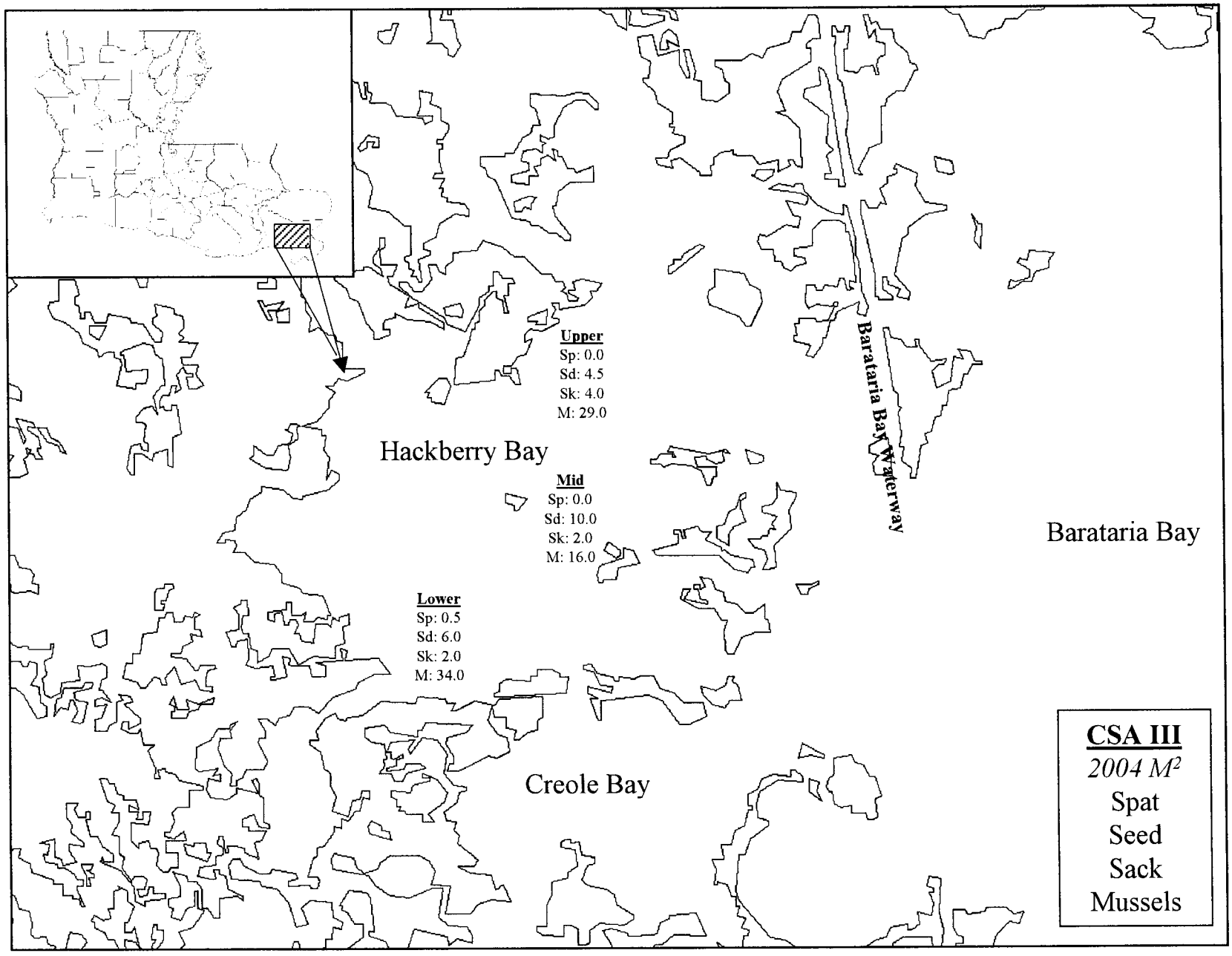
Re: Hackberry Bay Public Oyster Seed Reservation Meter Square Samples

Meter square oyster samples were collected July 07, 2004. Samples were taken at three stations (upper, middle, and lower) with two replicates at each site. Oysters were measured in 5-mm size classes; averaged for each class; and divided into groups of spat, seed, and sack oysters. Numbers of oysters in each size class for all samples are presented in Figure 3.1. Spat oysters, which measured less than 25 mm, averaged 0.2 per m^2. This number was the lowest of the previous eight years (Figure 3.2). Seed oysters, which measured 25 mm to less than 75 mm, averaged 6.8 per m^2. This number was lower than seven of the previous eight years. Last year, 2003, was the lowest. Sack oysters, which measured 75 mm and greater, averaged 2.7 per m^2. This number was lower than five of the past eight years. Oysters per m^2 were extrapolated for 5.938 hectares (14.7 acres) of reef. The results were 563.6 barrels of seed oysters and 879.7 sacks or 439.9 barrels of marketable oysters (Table 3.1).

During September 2003 to April 2004 from Hackberry Bay Oyster Seed Reservation, 14,780 sacks of marketable oysters and 3,136 barrels of seed oysters were harvested. A temporary Public Oyster Seed Ground was opened in Little Lake and 14,507 sacks of marketable oysters and 4,118 barrels of seed oysters were harvested.

On July 1st, 2004, oysters were collected for Dr. John Supan (LSU Cooperative Extension Service) from the mid Hackberry station with a dredge. Sack and seed oysters were separated for "Dermo" analysis. The results are presented later in the report.

Salinities have been below average due to above average rainfall for southeast Louisiana. These conditions are not conducive to oyster reproduction and survival. Salinities in Hackberry Bay dropped below 3.0 ppt on June 18th and have only been above 3.0 ppt for 32 hours in the past 30 days. During the past 24 days, the salinities in Hackberry Bay have ranged from 0.2 to 2.5 ppt. Salinities in Little Lake ranged from 0.1 to 0.5 ppt during the past 30 days. Temperatures ranged from 27.4 to 32.0 degrees Celsius. Mortalities observed during this sampling totaled 27.0 % in Hackberry Bay and 100 % in Little Lake. Hooked mussels per square meter averaged 26.3, which was below average but higher than the previous four years.


Upper
Sp: 0.0
Sd: 4.5
Sk: 4.0
M: 29.0
Hackberry Bay
Mid
Sp: 0.0
Sd: 10.0
Sk: 2.0
M: 16.0
Barataria Bay Waterway
Barataria Bay
Lower
Sp: 0.5
Sd: 6.0
Sk: 2.0
M: 34.0
Creole Bay
CSA III
2004 M²
Spat
Seed
Sack
Mussels

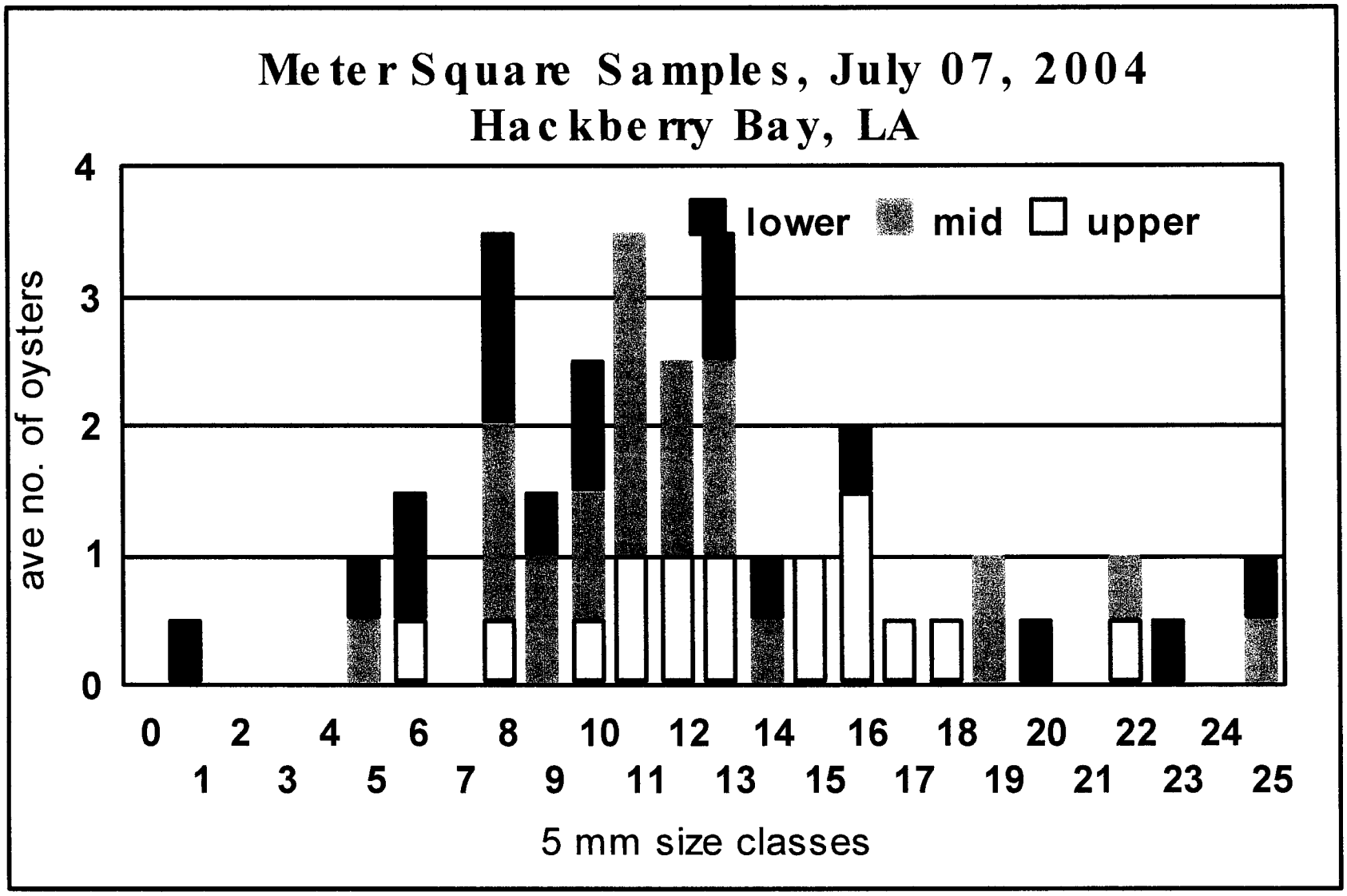


Figure 3.1. 2004 oyster size-frequency for Hackberry Bay Public Oyster Seed Reservation (Coastal Study Area III).

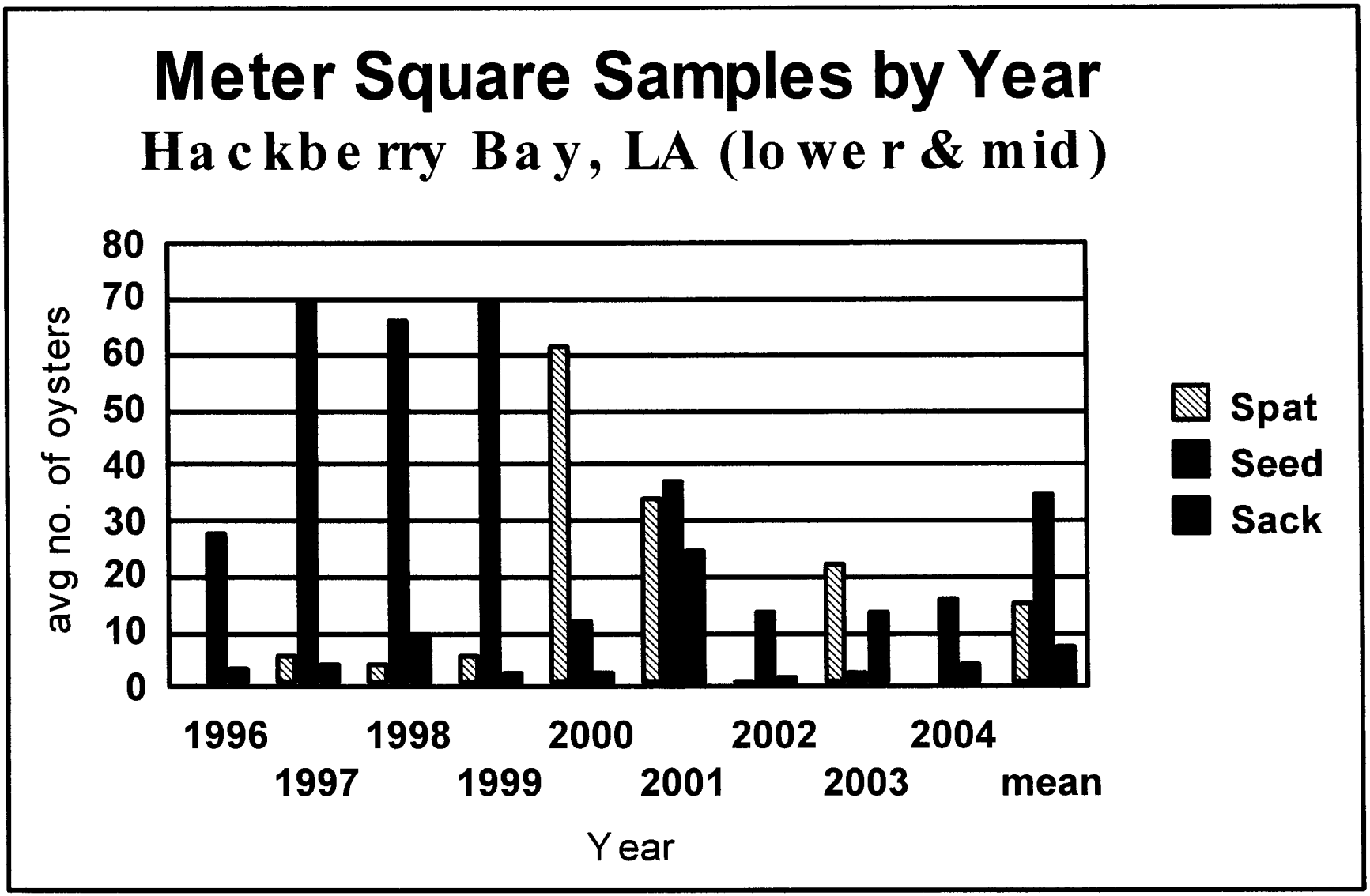


Figure 3.2. Historical square meter results for oyster resource on the Hackberry Bay Public Oyster Seed Reservation (Coastal Study Area III).

Table 3.1. 2004 Hackberry Bay Public Oyster Seed Reservation oyster availability (reefs only).

METER^2 STATION	REEF ACREAGE	# METER^2	AVG. # SEED OYSTERS PER M^2	AVG. # SACK OYSTERS PER M^2	BARRELS SEED OYSTERS	BARRELS SACK OYSTERS
1, 2, 3	14.7	59,380.0	6.83	2.67	563.6	439.9

Table 3.2 Monthly and 2003-2004 season production for Hackberry Bay and Little Lake.

Hackberry Bay

Month	Sacks	Barrels Seed	Days Boarded	Fishable Days	Estimate of Sacks	Estimate of Seed, bbl
September	205	207.5	5	20	820	830
October	495	15	5	31	3069	93
November	360	50	2	29	5220	725
December	320	110	3	30	3200	1100
January	180	62.5	5	31	1116	388
February	50	0	4	29	363	0
March	160	0	5	31	992	0
Total					**14780**	**3136**

Little Lake

Month	Sacks	Barrels Seed	Days Boarded	Fishable Days	Estimate of Sacks	Estimate of Seed, bbl
September	1880	650	5	28	10528	3640
October	115	0	3	31	1188	0
November	0	0	3	29	0	0
December	0	0	3	30	0	0
January	70	45	5	31	434	279
February	325	27.5	4	29	2356	199
March	0	0	5	31	0	0
Total					**14507**	**4118**

CSA V

State of Louisiana

Dwight Landreneau
Secretary

Department of Wildlife & Fisheries
Post Office Box 189
Bourg, LA 70343
(985) 594-4139

Kathleen Babineaux Blanco
Governor

July 7, 2004

MEMORANDUM:

TO: Patrick Banks

FROM: Steve Hein and Kenny King

SUBJECT: Oyster Seed Reservation Stock Assessment

Meter square (m^2) field sampling was completed by Coastal Study Area V personnel on June 22, 2004. A total of 13 stations, nine in Sister Lake [including the 1994 and 1995 shell plants (Figure 1)] and four in Bay Junop (Figure 2) were sampled. Two replicate m^2 samples were taken at each station.

Preliminary m^2 site assessment was performed prior to sampling. GPS coordinates were used to place markers at all m^2 stations in Sister Lake and Bay Junop (Tables 1 & 2).

Sister Lake Seed Reservation was open to harvest for the 2003-2004 season. Harvest began on 9/10/03 and closed on 10/10/03 with 127 different vessels participating. The effort resulted in 1,453 boat-days and an estimated harvest of 92,580 sacks of market oysters and 11,840 barrels (BBLS) of seed oysters for total production of 58,130 BBLS. The general trend since the early 1970's indicates industry's increased emphasis on sack oyster production (Figure 5). More detailed information is available in the 2003 Oyster Seed Reservation Final Report on 3/10/04.

Overall, total BBLS available for harvest for the 2004-2005 assessment has decreased from last year by 48%. Oysters available for harvest this season in Sister Lake total 104,598 BBLS (Table 3) of seed oysters and 43,193 BBLS (Table 3) of sack oysters ranking them 14th and 17th, respectively, for the period since 1980 (Table 7). Barrels of sack oysters available for harvest represents a decline of 72% from last year's assessment, with barrels of seed oysters decreasing 20% from last year's assessment (Figure 3). The ratio of seed to sack availability has increased from last year's assessment of 0.9/1.0 to 2.4/1.0 for 2004 (Table 5). The majority of estimated sack and seed oysters available for harvest is located above the traditional Department of Health and Hospitals (DHH) pollution line effective November 1. Sack oysters have declined at all stations since last year's assessment but is more pronounced above the DHH line where much of the 2003 effort was concentrated.

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In an effort to remove silt overburden from Hurricane Lili and Tropical Storm Isidore, Bay Junop Seed Reservation was open to sack and seed harvest for a period of 12 days in 2003. Results of m^2 sampling estimate 4,142.2 BBLS of seed oysters and 7,547.3 BBLS of sack oysters available for harvest (Table 4). Seed oyster availability has decreased 60% from the 2003 assessment and represents one of the lowest seed estimates to date (Table 8). Sack oyster availability has decreased 78% from the 2003 assessment with production estimates ranking 19th out of 24 in historical production (Table 8). Overall, total BBLS available for harvest has decreased 73% from the 2003 assessment and represents the fourth lowest estimate on record (Table 6; Figure 4). Seed to sack ratio has increased from last year's assessment of 0.3/1.0 to 0.5/1.0 for 2004 (Table 6).

Average water temperatures in Sister Lake and Bay Junop were at or near the long term average (LTA) for the months of May and June (Tables 11 & 12) with the greatest deviance being 0.8°C Salinities in Sister Lake were above the LTA (14.5 ppt) for May (17.2 ppt) and above the LTA (9.6 ppt) for June (12.2 ppt). Salinities in Bay Junop were near the LTA (19.0 ppt) for May (18.9 ppt) and above the LTA (13.8 ppt) for June (18.6 ppt) (Table 12). Square meter temperatures and salinities can be found in Tables 9 and 10.

No significant oyster mortality was observed in m^2 samples with 1.4% overall mortality in Sister Lake and Bay Junop. Average spat sets were noted, with Sister Lake averaging 48 spat per station and Bay Junop averaging 43 spat per station.

Replicate samples were combined for a total number of hooked mussels at each station (Tables 13 & 14). Biofouling rates of hooked mussels in Sister Lake has decreased 20% from last year's assessment with four stations (200, 207, 216, 217) accounting for 86% of the total hooked mussels. The remaining five stations ranged from 0-51 hooked mussels per station. Biofouling rates of hooked mussels in Bay Junop have decreased 54% from the 2003 assessment with one station (251) accounting for 76% of the total hooked mussels. The remaining three stations ranged from 0-47 hooked mussels per station.

Perkinsus marinus analysis is not available at this time as "Dermo" samples are scheduled to be collected during the first week of July. Results will be forwarded when data is available.

No evidence of oyster drills (*Stramonita haemastoma*) was present in m^2 samples, however some eggs were noted in May and June dredge samples in Sister Lake. A total of 31 unidentified mud crabs were recorded from the 13 stations. No blue crabs (*Callinectes sapidus*), stone crabs (*Menippe adina*), or toadfish (*Opsanus beta*) were collected.

Through a Federal Grant, Coastal Impact Assessment Program (CIAP), monies were available to establish a first ever cultch plant on the Lake Mechant Seed Ground. Marine Fisheries personnel identified an approximate 40-acre site of suitable substrate and water depth on the Lake Mechant Seed Ground. Along with Department surveyors the perimeter was established. On May 8-21, 2004 cultch planting by bucket dredge was completed. Materials consisted of 9,460 yd^3 of #57 limestone.

Through a Federal Grant Program, the Louisiana Oyster Rehabilitation and Promotion Project, a new cultch plant was established in Sister Lake. Marine Fisheries personnel located an area of firm substrate in the southern portion of Sister Lake with good water depth and nearby access to the deep water of Grand Caillou Bayou. From 5/23/04 to 5/29/04 approximately 10,300 cubic yards

(yd^3) of material was deposited by bucket dredge in combination with high pressure water hose spray over the approximate 50-acre site. Materials consisted of: 6,707 yd^3 of #57 limestone, 3,003 yd^3 of crushed concrete and 591 yd^3 of whole oyster shell.

SH:KK/jbv

cc: Jim Hanifen
Martin Bourgeois

Figure 1 Sister Lake Meter Square Samples (average # of seed and sack oysters at each station)

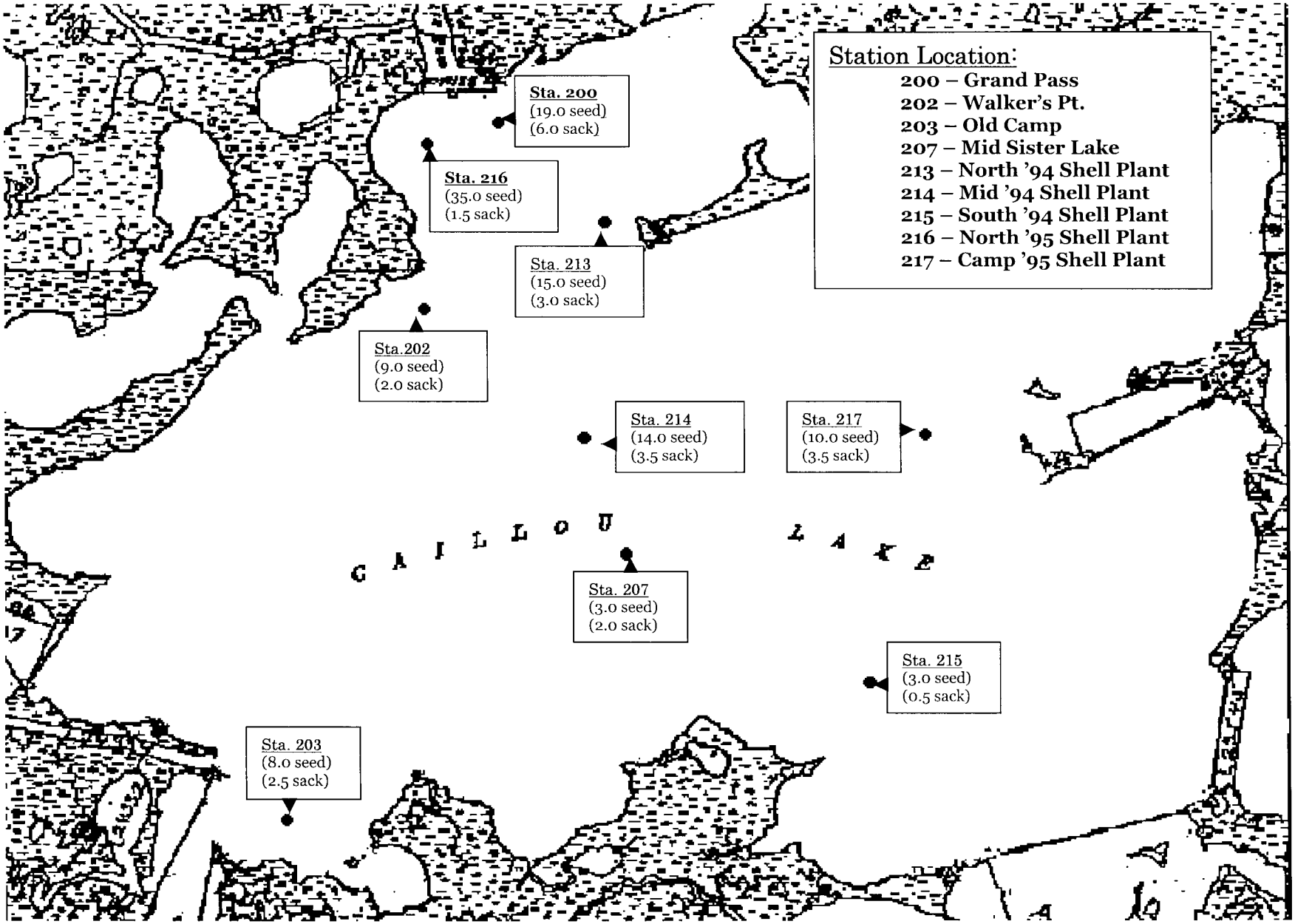


Figure 2 Bay Junop Meter Square Samples

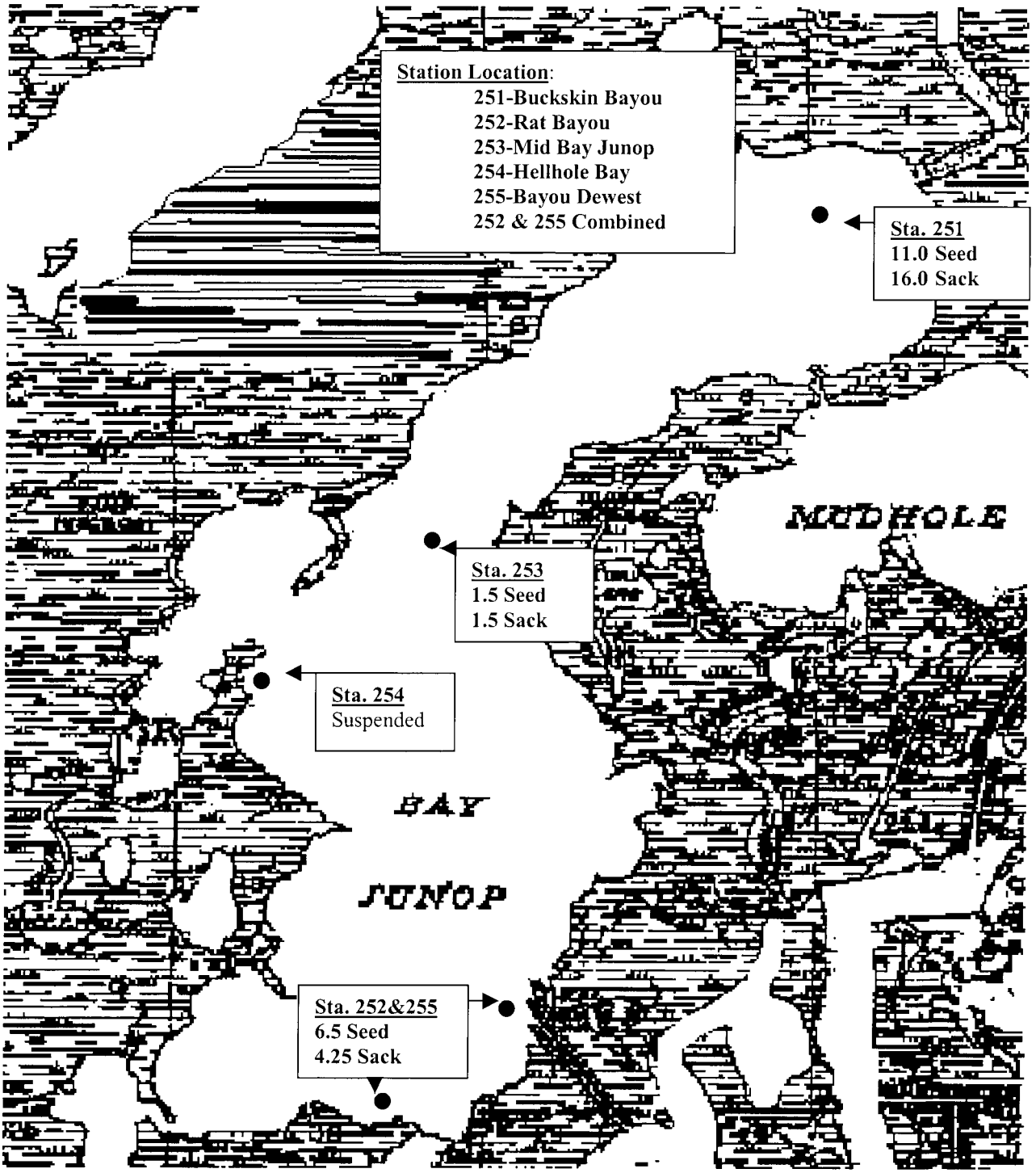


Table 1 Sister Lake M² Sample Coordinates

Stn. #	Stn. Name	North Lat.	West Long.	Depth
200	Grand Pass	29°15'28.5"	90°55'45.5"	10'
202	Walkers Pt.	29°14'50.9"	90°56'16.9"	6'
203	Old Camp	29°12'58.2"	90°56'40.2"	4'
207	Mid Sister Lake	29°14'00.1"	90°55'14.7"	6'
213**	N '94 Shell Plant	29°15'02.9"	90°55'30.9"	6'
214**	Mid '94 Shell Plant	29°14'16.5"	90°55'33.8"	6'
215**	S '94 Shell Plant	29°13'14.1"	90°53'53.6"	5'
216***	N '95 Shell Plant	29°15'25.1"	90°56'10.1"	5'
217***	Camp '95 Shell Plant	29°14'21.8"	90°54'18.3"	5'

* Revised July 2001

** Not permanent stations; will sample 5 years then stop; 1995-1999. Continued samples '00-'04.

***Not permanent stations; will sample 5 years then stop; 1996-2000. Continued samples '01-'04.

Table 2 Bay Junop M² Sample Coordinates

Stn. #	Stn. Name	North Lat.	West Long.	Depth
251	@ Buckskin Bayou	29°15'56.1"	91°01'45.1"	6'
252	@Rat Bayou	29°13'06.6"	91°02'52.6"	3'
253	Mid Bay Junop	29°14'43.7"	91°03'08.6"	5'
254	Mid @ Hellhole Bay**	29°14'09.6"	91°03'47.6"	4'
255	@ Bayou deWest	29°12'38.4"	91°03'18.2"	4'

* Revised July 2001

** Suspended due to conflict with private lease

Table 3 2004 Sister Lake Oyster Availability

METER² STATION	REEF ACREAGE	#METER²	#SEED OYSTERS	#SACK OYSTERS	BARRELS SEED OYSTERS	BARRELS SACK OYSTERS
200	221.58	896,734.26	19	6	23,663.8	4,981.8
202	81.93	331,570.71	9	2	4,144.6	1,842.1
203	151.31	612,352.00	8	2.5	6,803.9	4,252.4
207	185.72	751,608.84	3	2	3,131.7	4,175.6
213*	96	388,512	15	3	8,094.0	3,237.6
214*	129	522,063	14	3.5	10,151.2	5,075.6
215*	81	327,807	3	0.5	1,365.9	455.3
216**	115	465,405	35	1.5	22,623.8	1,939.2
217**	438	1,772,586	10	3.5	24,619.2	17,233.5
TOTAL	**1,499.54**	**6,068,639**	**116**	**24.5**	**104,598.1**	**43,193.1**

* **1994 Shell Plants**
** **1995 Shell Pants**

Table 4 2004 Bay Junop Oyster Availability

METER² STATION	REEF ACREAGE	#METER²	#SEED OYSTERS	#SACK OYSTERS	BARRELS SEED OYSTERS	BARRELS SACK OYSTERS
251	17.2	69,608.40	11	16	1,063.5	3,093.7
252*	67.36	272,605.92	6.5	4.25	2,461.0	3,218.3
253	73.26	296,483.22	1.5	1.5	617.7	1,235.3
254**	94.20	381,227.40	-	-	-	-
255*						
TOTAL	**252.02**	**1,019,924.9**	**19.0**	**21.75**	**4,142.2**	**7,547.3**

* **Stations 252 and 255 are combined.**
** **Suspended due to conflict with private lease**

Table 5 Sister Lake Historical Meter² Available Oyster Production Estimates

YEAR	BARRELS SEED	BARRELS SACK	TOTAL BBLS AVAILABLE PRODUCTION	RATIO SEED TO SACK AVAILABILITY
1980*	142,620.1	35,170.3	177,790.4	4.1-1.0
1981	111,146.1	110,990.2	222,136.3	1.0-1.0
1982	76,950.0	94,050.0	171,000.0	0.8-1.0
1983	8,768.5	27,654.5	36,423.0	0.3-1.0
1984	69,136.0	50,587.0	119,723.0	1.4-1.0
1985	13,775.0	16,206.0	29,981.0	0.8-1.0
1986	32,633.0	21,516.0	54,150.0	1.5-1.0
1987	18,522.0	2,008.0	20,530.0	9.2-1.0
1988	47,695.0	69,570.0	117,265.0	0.7-1.0
1989	26,179.0	64,549.5	90,728.5	0.4-1.0
1990	72,862.9	24,282.0	97,144.9	3.0-1.0
1991	87,044.2	28,733.7	115,777.9	3.0-1.0
1992	172,132.0	209,854.0	381,986.0	0.8-1.0
1993	77,190.0	35,824.0	113,014.0	2.2-1.0
1994	358,455.0	50,429.0	408,884.0	7.1-1.0
1995	236,687.0	397,777.0	634,464.0	0.6-1.0
1996	384,500.0	256,164.0	640,664.0	1.5-1.0
1997	540,270.2	557,072.2	1,097,342.4	1.0-1.0
1998	298,975.0	327,125.0	626,100.0	0.9-1.0
1999	452,991.0	301,321.0	452,991.0	1.5-1.0
2000	243,589.9	76,515.5	320,105.4	3.2-1.0
2001	304,763.0	343,655.5	648,418.5	0.9-1.0
2002	115,034.0	186,233.4	301,257.4	0.6-1.0
2003	131,038.3	151,844.5	282,882.8	0.9-1.0
2004	104,598.1	43,193.1	147,791.2	2.4-1.0

* BASED ON 1999 ACREAGE

Figure 3 Sister Lake Historical Stock Size

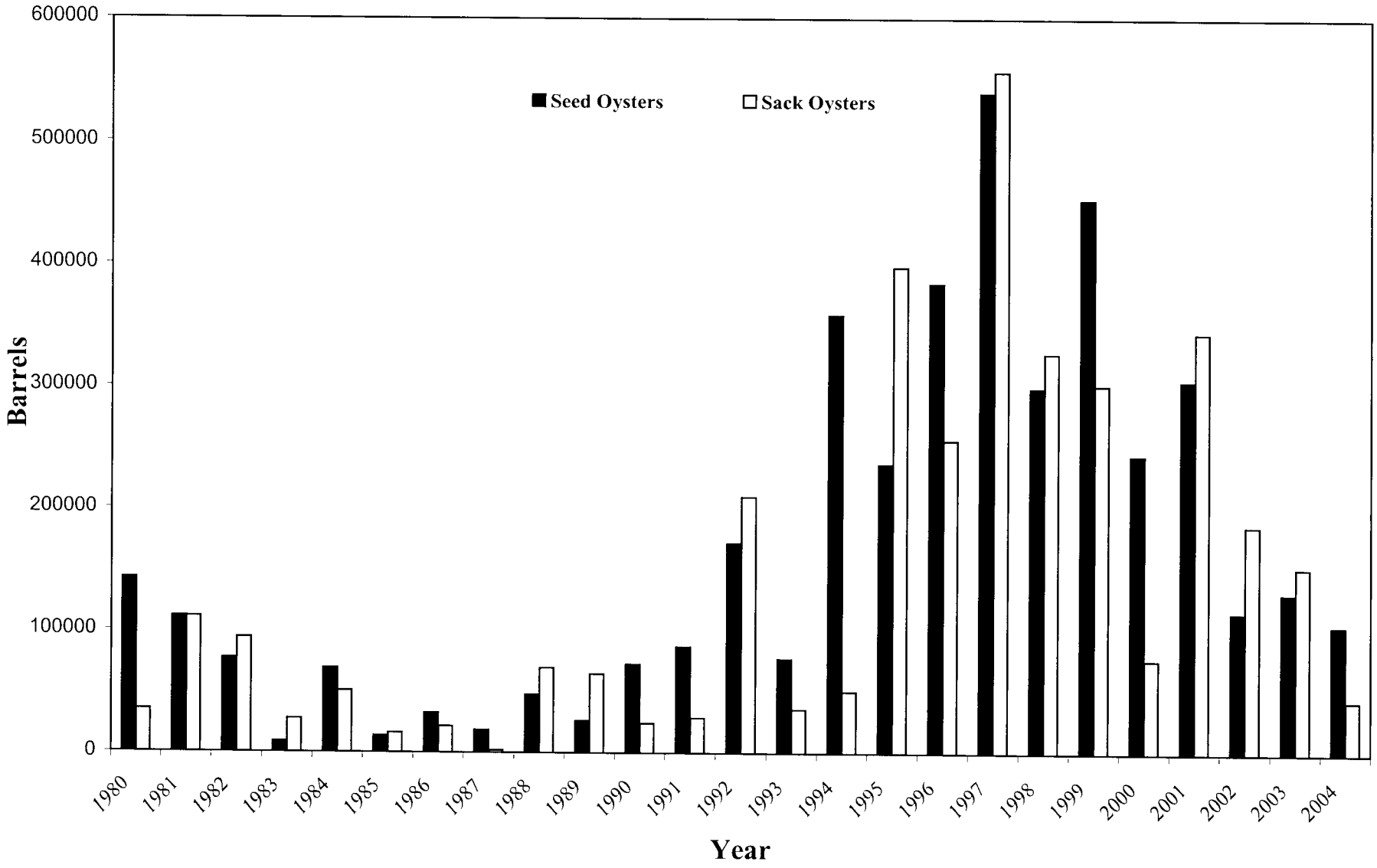


Table 6 Bay Junop Historical Meter² Available Oyster Production Estimates

YEAR	BARRELS SEED	BARRELS SACK	TOTAL BBLS AVAILABLE PRODUCTION	RATIO SEED TO SACK AVAILABILITY
1980*	4,297.4	5,632.3	9,929.7	0.8-1.0
1981	22,329.0	15,213.0	37,542.0	1.5-1.0
1982	7,082.2	21,809.0	28,891.2	0.3-1.0
1983	6,464.0	11,129.0	17,593.0	0.6-1.0
1984**	----	----	----	----
1985	10,004.0	3,344.5	13,348.5	3.0-1.0
1986	4,632.0	4,317.0	8,949.0	1.1-1.0
1987	5,878.0	11,188.0	17,066.0	0.5-1.0
1988	3,282.0	1,169.0	4,451.0	2.8-1.0
1989	8,073.7	8,935.0	17,009.0	0.9-1.0
1990	6,787.0	5,249.5	12,036.5	1.3-1.0
1991	8,843.0	11,166.0	20,009.0	0.8-1.0
1992	47,448.0	31,128.0	78,572.0	1.5-1.0
1993	51,492.0	32,466.0	83,958.0	1.6-1.0
1994	78,896.0	114,303.0	193,199.0	0.7-1.0
1995	38,950.0	67,837.0	106,787.0	0.6-1.0
1996	62,841.0	117,669.0	180,510.0	0.5-1.0
1997	17,262.0	29,243.0	46,505.0	0.6-1.0
1998	52,340.1	90,786.6	143,126.7	0.6-1.0
1999	63,010.4	28,763.5	91,773.5	2.2-1.0
2000	34,107.1	61,193.8	95,300.9	0.6-1.0
2001	29,453.4	32,004.9	61,458.3	0.9-1.0
2002	15,524.4	21,583.3	37,107.7	0.7-1.0
2003***	10,455.6	33,518.0	43,973.6	0.3-1.0
2004***	4,142.2	7,547.3	11,689.5	0.5-1.0

* BASED ON 1999 ACREAGE
** NO SAMPLES TAKEN
*** CALCULATED WITHOUT STATION 254

Figure 4 Bay Junop Historical Stock Size

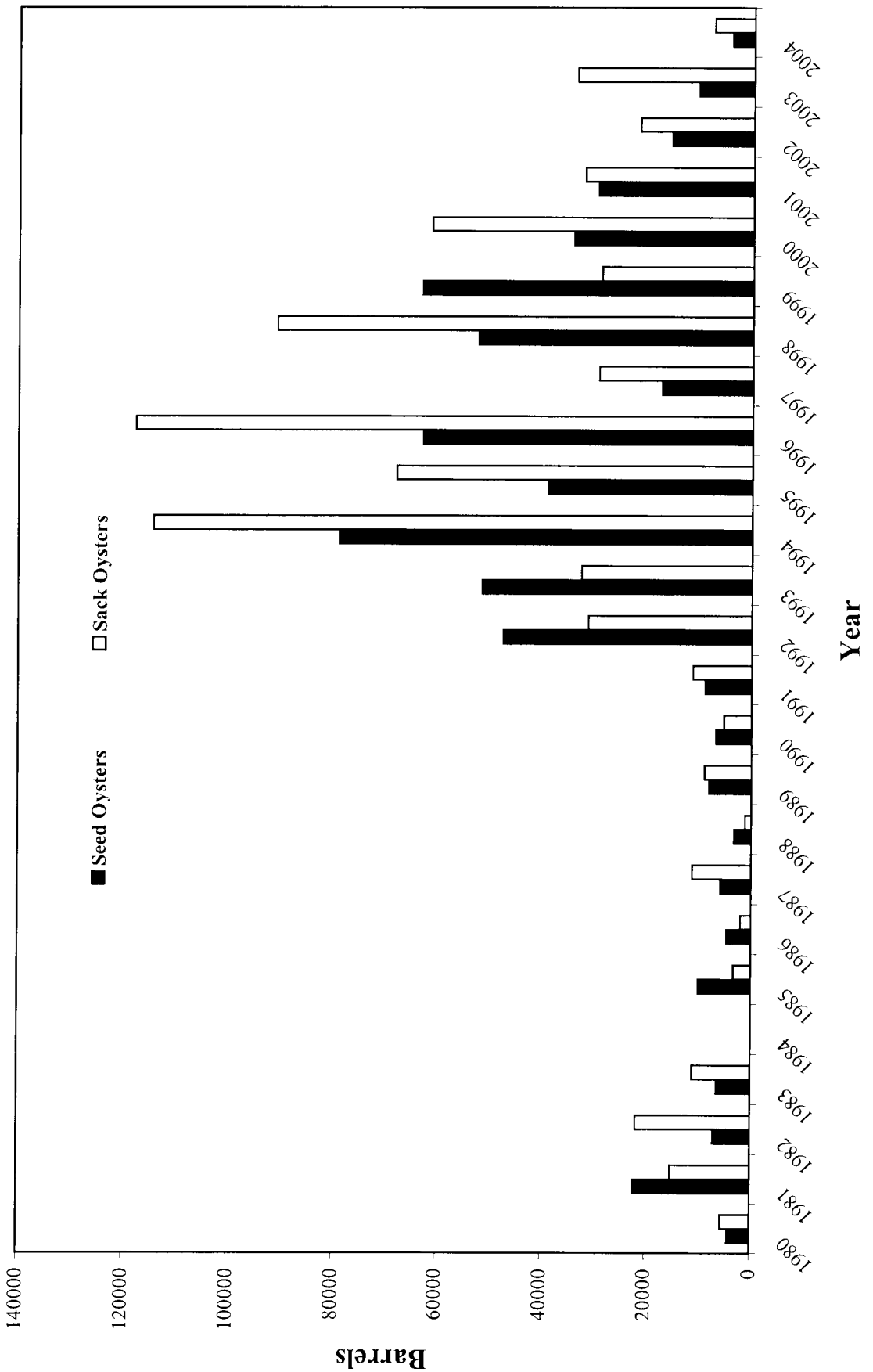


Table 7 Sister Lake Ranking of Seed and Sack Available Oyster Production

YEAR	BARRELS SEED*
1997	540,270.2
1999	452,991.0
1996	384,500.0
1994	358,455.0
2001	304,763.0
1998	298,975.0
2000	243,589.9
1995	236,687.0
1992	172,132.0
1980	142,620.1
2003	131,038.3
2002	115,034.0
1981	111,146.1
2004	104,598.1
1991	87,044.2
1993	77,190.0
1982	76,950.0
1990	72,862.9
1984	69,136.0
1988	47,695.0
1986	32,633.0
1989	26,179.0
1987	18,522.0
1985	13,775.0
1983	8,768.5

* BASED ON 1999 ACREAGE

YEAR	BARRELS SACK*
1997	557,072.2
1995	397,777.0
2001	343,655.5
1998	327,125.0
1999	301,321.0
1996	256,164.0
1992	209,854.0
2002	186,233.4
2003	151,844.5
1981	110,990.2
1982	94,050.0
2000	76,515.5
1988	69,570.0
1989	64,549.5
1984	50,587.0
1994	50,429.0
2004	43,193.1
1993	35,824.0
1980	35,170.3
1991	28,733.7
1983	27,654.5
1990	24,282.0
1986	21,516.0
1985	16,206.0
1987	2,008.0

Table 8 Bay Junop Ranking of Seed and Sack Available Oyster Production

YEAR	BARRELS SEED*
1994	78,896.0
1999	63,010.4
1996	62,841.0
1998	52,340.1
1993	51,492.0
1992	47,448.0
1995	38,950.0
2000	34,107.1
2001	29,453.4
1981	22,329.0
1997	17,262.0
2002	15,524.4
2003***	10,455.6
1985	10,004.0
1991	8,843.0
1989	8,073.7
1982	7,082.2
1990	6,787.0
1983	6,464.0
1987	5,878.0
1986	4,632.0
1980	4,297.4
2004***	4,142.2
1988	3,282.0
1984**	----

YEAR	BARRELS SACK*
1996	117,669.0
1994	114,303.0
1998	90,786.6
1995	67,837.0
2000	61,193.8
2003***	33,518.0
1993	32,466.0
2001	32,004.9
1992	31,128.0
1997	29,243.0
1999	28,763.5
1982	21,809.0
2002	21,583.3
1981	15,213.0
1987	11,188.0
1991	11,166.0
1983	11,129.0
1989	8,935.0
2004***	7,547.3
1980	5,632.3
1990	5,249.5
1986	4,317.0
1985	3,344.5
1988	1,169.0
1984**	----

* BASED ON 1999 ACREAGE
** NO SAMPLES TAKEN
*** CALCULATED WITHOUT STATION 254

Table 9 Sister Lake Meter² Temp and Salinity

STATION	STATION NAME	TEMP (°C)**	SAL (ppt)**
200	GRAND PASS	29.4	8.0
202	WALKER'S PT.	29.9	12.9
203	OLD CAMP	30.1	16.9
207	MID SISTER LAKE	30.3	11.2
213*	NORTH '94*	30.7	14.5
214*	MID '94*	30.7	16.2
215*	SOUTH '94*	30.3	16.9
216*	NORHT '95*	30.8	14.7
217*	CAMP '95*	30.4	12.8
	Mean	30.3	13.8

*SHELL PLANTS

Table 10 Bay Junop Meter² Temp and Salinity

STATION	STATION NAME	TEMP (°C)**	SAL (ppt)**
251	@BUCKSKIN BAYOU	29.8	14.3
252	@RAT BAYOU	29.6	19.6
253	MID BAY JUNOP	29.7	18.5
254*	MID @ HELL HOLE	-	-
255	@ BAYOU deWEST	29.6	17.2
	Mean	29.7	17.4

* Suspended due to conflict with private lease

Table 11 Mean Water Temp (°C) in Sister Lake and Bay Junop

	SISTER LAKE		BAY JUNOP	
YEAR	MAY	JUNE	MAY	JUNE
1995	27.3	29	29.3	29.3
1996	27.2	29.5	28.4	30.3
1997	27.1	30	26.4	28.6
1998	27.8	30.1	28	28.9
1999	25	28.8	25	28.8
2000	27.3	28.8	28.3	29.7
*2001	24.9	29.3	26.0	30.1
*2002	28.4	28.7	28.4	28.5
*2003	27.8	30.0	27.6	30.2
*2004	27.8	29.5	27.5	29.2
mean	**27.0**	**29.4**	**27.5**	**29.4**

*OYSTER DREDGE SAMPLES

Table 12 Mean Salinity (ppt) in Sister Lake and Bay Junop

	SISTER LAKE		BAY JUNOP	
YEAR	MAY	JUNE	MAY	JUNE
1995	14.5	8.8	23.3	12.6
1996	15.8	7.4	24.3	12.2
1997	4.1	3.4	10.6	10.7
1998	6.6	4.8	14.4	8.6
1999	17.7	12.4	19.4	13
2000	22	20.5	25.5	27.7
*2001	17.6	8.2	18.4	9.8
*2002	14.2	11.1	16.6	15.9
*2003	15.4	7.2	18.2	8.9
*2004	17.2	12.2	18.9	18.6
mean	**14.5**	**9.6**	**19.0**	**13.8**

*OYSTER DREDGE SAMPLES

Table 13 Sister Lake Hooked Mussel Distribution

	200	202	203	207	213	214	215	216	217
1998	2	48	0	112	123	64	31	35	534
1999	28	59	85	85	23	51	567	45	201
2000	2	2	0	11	27	19	6	22	9
2001	764	3	0	0	129	350	0	124	36
2002	322	9	0	36	247	145	4	5	0
2003	224	38	3	73	506	28	0	37	73
2004	146	9	0	110	51	28	23	131	283

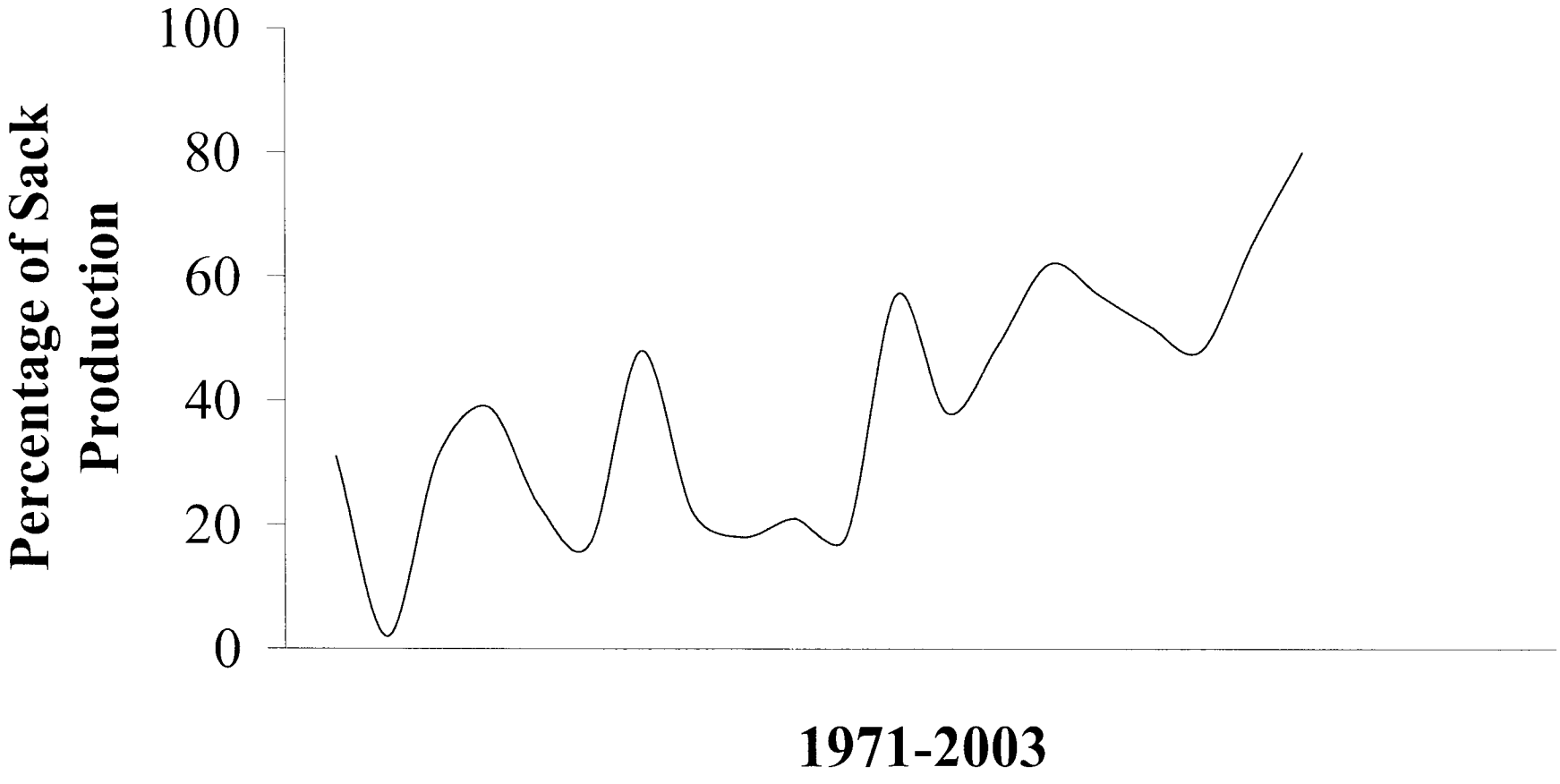
*** Hooked Mussels in sample – sample and replicate combined to show total mussels for each station

Table 14 Bay Junop Hooked Mussel Distribution

	251	252	253	254**	255
1998	0	19	88	750	78
1999	136	24	20	452	25
2000	308	0	9	14	17
2001	0	49	0	78	0
2002*	0	0	0	0	0
2003	396	55	10	-	2
2004	161	47	0	-	5

* No Data Collected – Noted that some stations may have had five or less
** Suspended due to conflict with private lease
*** Hooked Mussels in sample – sample and replicate combined to show total mussels for each station

Figure 5 Sack Production Percentage of Total Production



CSA VI

State of Louisiana

Dwight Landreneau
Secretary

Department of Wildlife & Fisheries
2415 John Darnall Road
New Iberia, LA 70560
(337) 373-0032

Kathleen Babineaux Blanco
Governor

MEMORANDUM

TO: Patrick Banks

FROM: E. Paul Cook

DATE: July 14, 2004

SUBJECT: CSA 6 Square Meter Oyster Samples / 2004

Square meter field sampling of designated sites on the inshore and offshore areas of the Vermilion, East and West cote Blanche and Atchafalaya Bays Public Oyster Seed Ground was completed on June 30, 2004. A total of 5 (five) stations were sampled with one additional replicate made at each station.

Results of the 2004 samples follows:

STATION NO.	STATION NAME	AVG. NO. LIVE SEED OYSTERS	AVG. NO. LIVE SACK OYSTERS
001	South Pt. / M. I.	6.0	0.0
002	Big Charles / SWP	5.5	0.0
003	Indian Pt. / SWP	11.0	0.0
004	Dry Reef	0.0	0.0
005	Bayou Blanc	0.5	0.0

An overall Vermilion Bay area stock assessment is not possible at this time as figures relative to oyster reef sizes are not available.

This years samples found no sack oysters that would potentially be available for harvest.

It is evident from this years results that the oyster resource has once again been affected by low salinity conditions. Numbers of live oysters present in 2004 are well below those resulting from the increased and more stable salinities seen during the drought period of 1999 through 2000 (See Table 5.1).

Table 5.1

Vermilion / Atchafalaya Area Oyster Availability (by year)		
Year	**Seed/Sack Ratio (M^2)**	**Average No. Oysters/Sample (M^2)**
1999	69.0:1	14.0
2000	34.0:1	90.9
2001	9.5:1	41.9
2002	22.5:1	13.6
2003	No Sack Oysters	01.9
2004	No Sack Oysters	4.6

Atchafalaya River discharge for the spring and early summer 2004 remained at levels that significantly affected hydrologic conditions in the Vermilion / Atchafalaya Bays Complex. Average salinity for sampled sites fell below 2.0 ppt in May 2004 and has remained at very low levels throughout June as well. All sites sampled with the square meter on June 30 were below 1.0 ppt (See Table 5.2).

Table 5.2

Vermilion / Atchafalaya Area M^2 Site Salinity and Water Temperature (6/30/04)			
STATION NO.	**STATION NAME**	**SALINITY (ppt)**	**TEMPERATURE (°C)**
001	South Point / M. I.	0.2	28.9
002	Big Charles / SWP	0.9	29.1
003	Indian Point / SWP	0.9	29.1
004	Dry Reef	0.3	28.1
005	Bayou Blanc	0.3	29.4

Recent oyster mortality on the seed ground has been noted from dredge samples taken in 2004. Though salinity levels were low throughout the spring, (March, April, May 2004) no oyster mortality was observed. Dredge samples taken on May 20, 2004 averaged 145.3 live oysters with no recent mortality noted (the ratio of seed/sack oysters was 112:1), but the average salinity for sampled sites had fallen to 1.1 ppt. By June 28, 2004 the average number of live oysters in samples had fallen to 43.3 and a recent mortality rate of 100% and 59% was noted for Bayou Blanc and South Point/Marsh Island respectively.

A chart tracking hooked mussel fouling over the past 5 (five) years (see Table 5.3) indicates that levels have remained relatively low in the eastern part of system (Bayou Blanc and South Point/Marsh Island). A significant decrease in fouling was noted at the Big Charles and Dry Reef sites for 2004.

Table 5.3

Vermilion / Atchafalaya Hooked Mussel Distribution (by year) *						
Station No.	**Station Name**	**2000**	**2001**	**2002**	**2003**	**2004**
001	**South Point/Marsh Island**	58	3	8	19	34
002	Big Charles	16	54	187	172	45
003	Indian Point	304	180	31	90	92
004	Dry Reef	9	78	NDA	468	23
005	Bayou Blanc	31	51	65	64	33

*Average number hooked mussels per M^2 sample.

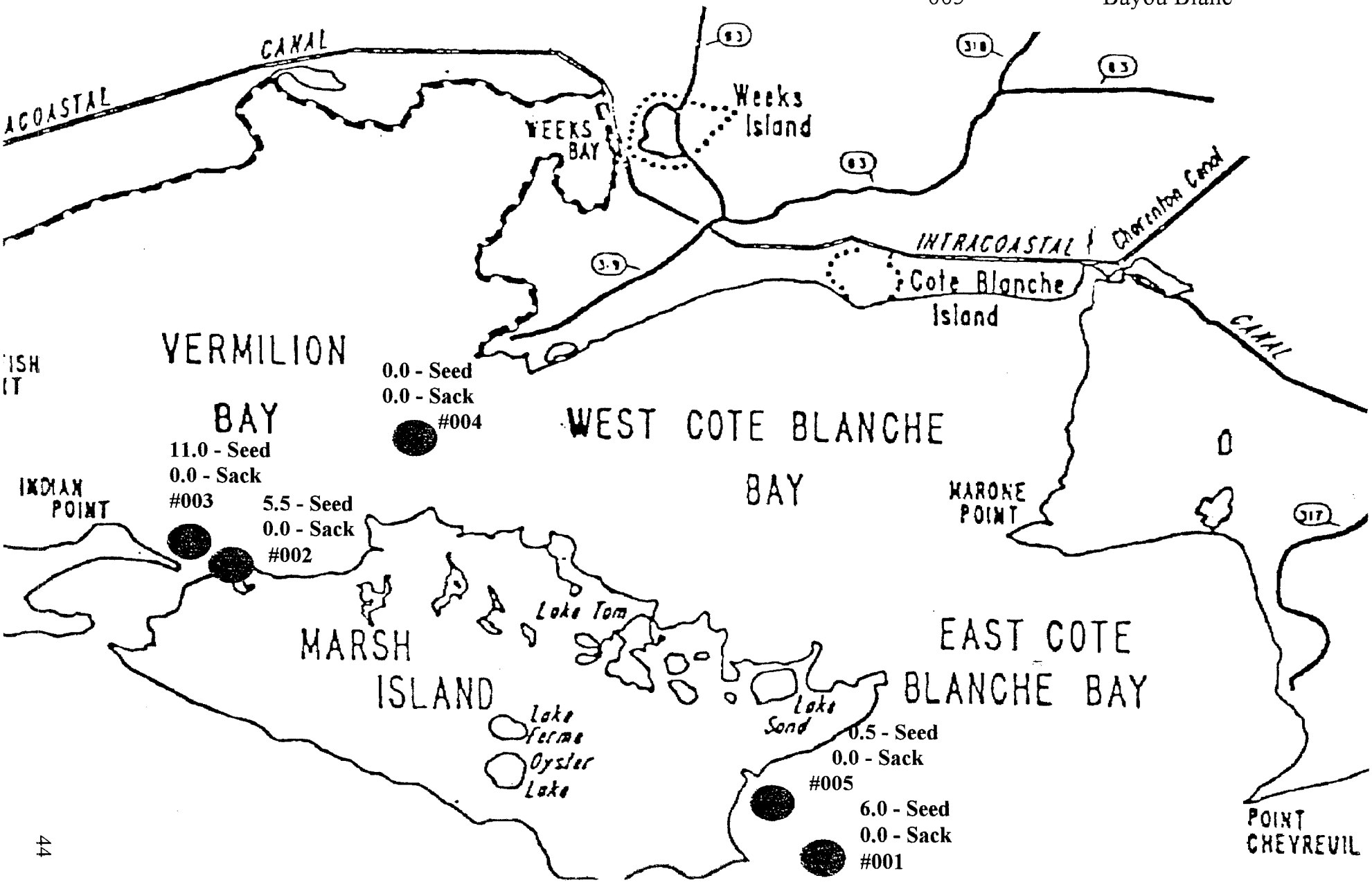
"Dermo" samples from the eastern and western part of the system were delivered to Dr. Tom Soniat on July 1, 2004. Results of his analysis were not available for this report.

Maps and graphs depicting the 2004 CSA 6 assessment are presented as follows:

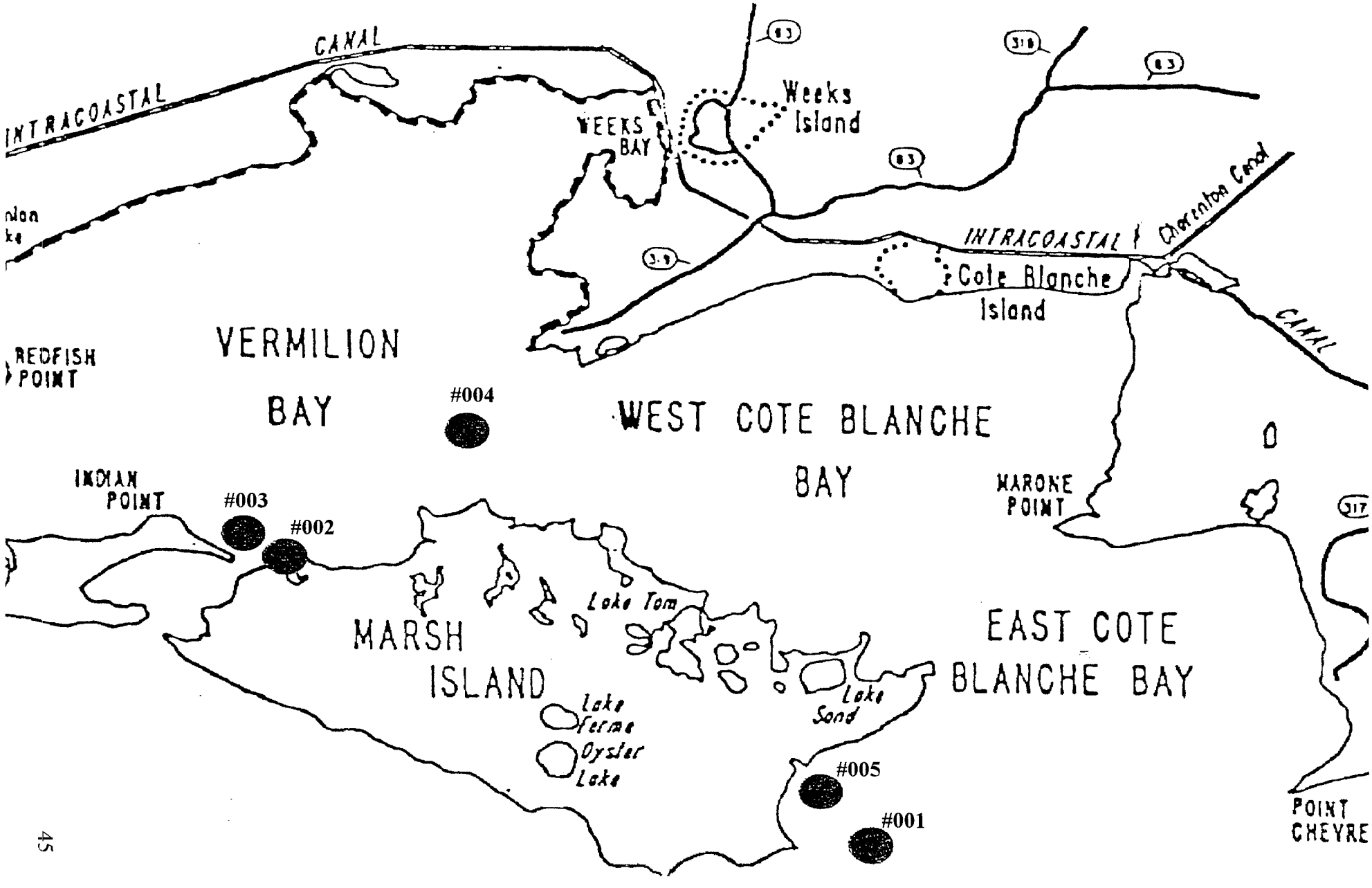
EPC/dgg

2004 SQUARE METER / CSA 6

STATION NO.	STATION NAME
001	South Point
002	Big Charles
003	Indian Point
004	Dry Reef
005	Bayou Blanc



2004 SQUARE METER / CSA 6	STATION NAME	STATION NO.	LATITUDE	LONGIT
	South Point	001	N29°28.980'	W91°45.4
	Big Charles	002	N29°36.853'	W91°59.2
	Indian Point	003	N29°37.112'	W92°00.5
	Dry Reef	004	N29°41.179'	W91°54.1
	Bayou Blanc	005	N29°30.800'	W91°45.5



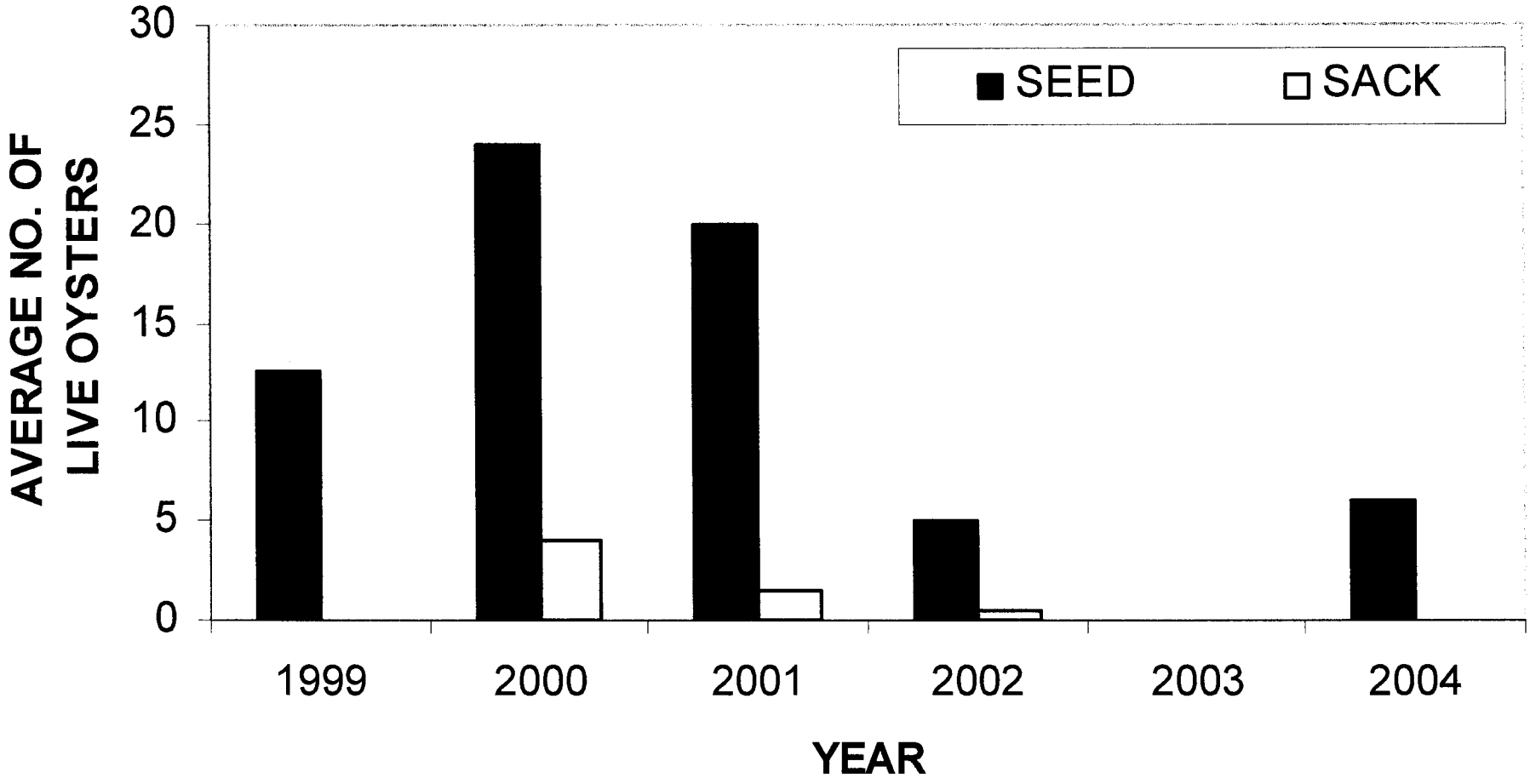


Figure 6.1. Average number of oysters per square meter at South Point (Station 001) in Coastal Study Area VI.

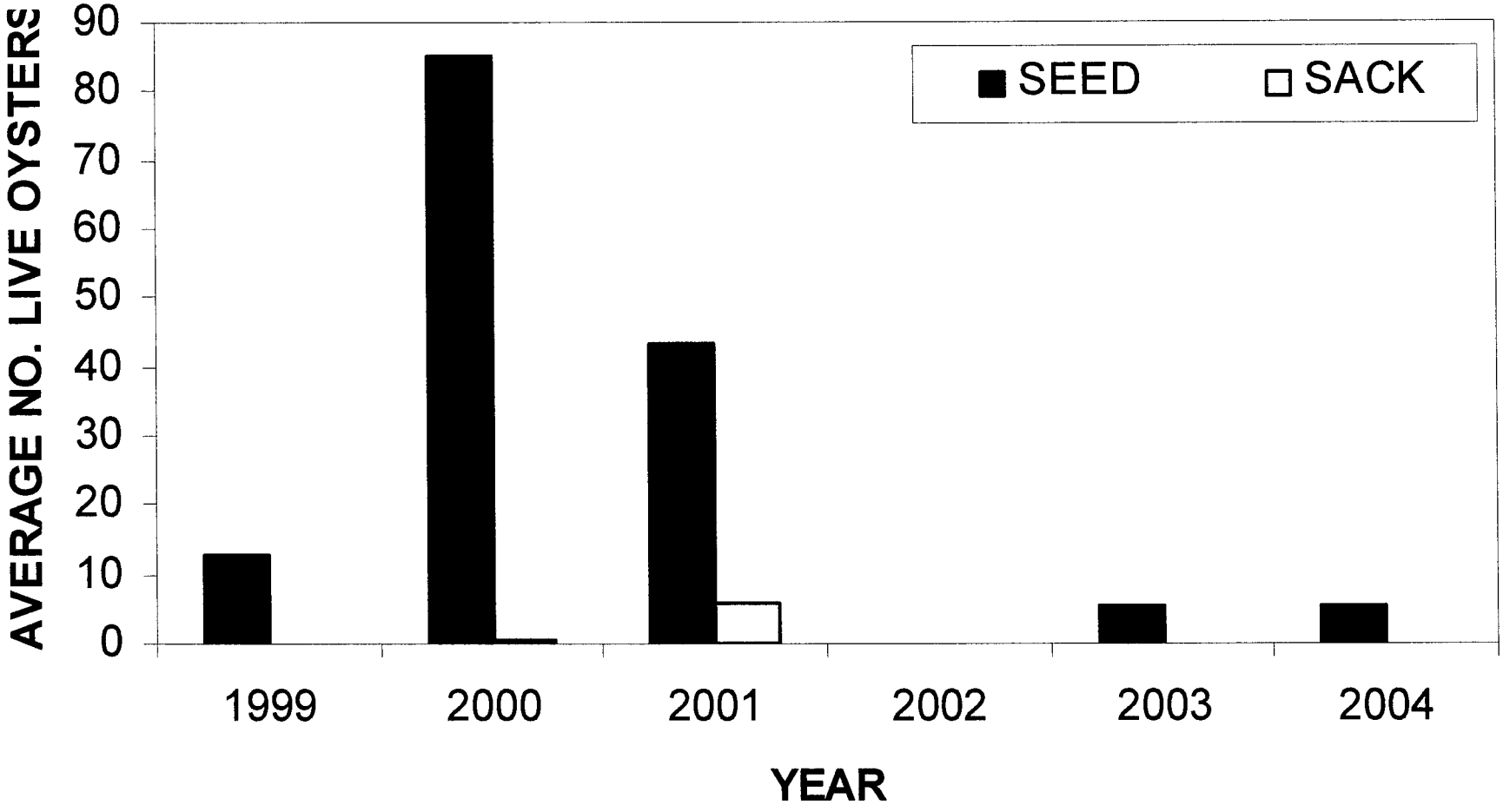


Figure 6.2. Average number of oysters per square meter at Big Charles (Station 002) in Coastal Study Area VI.

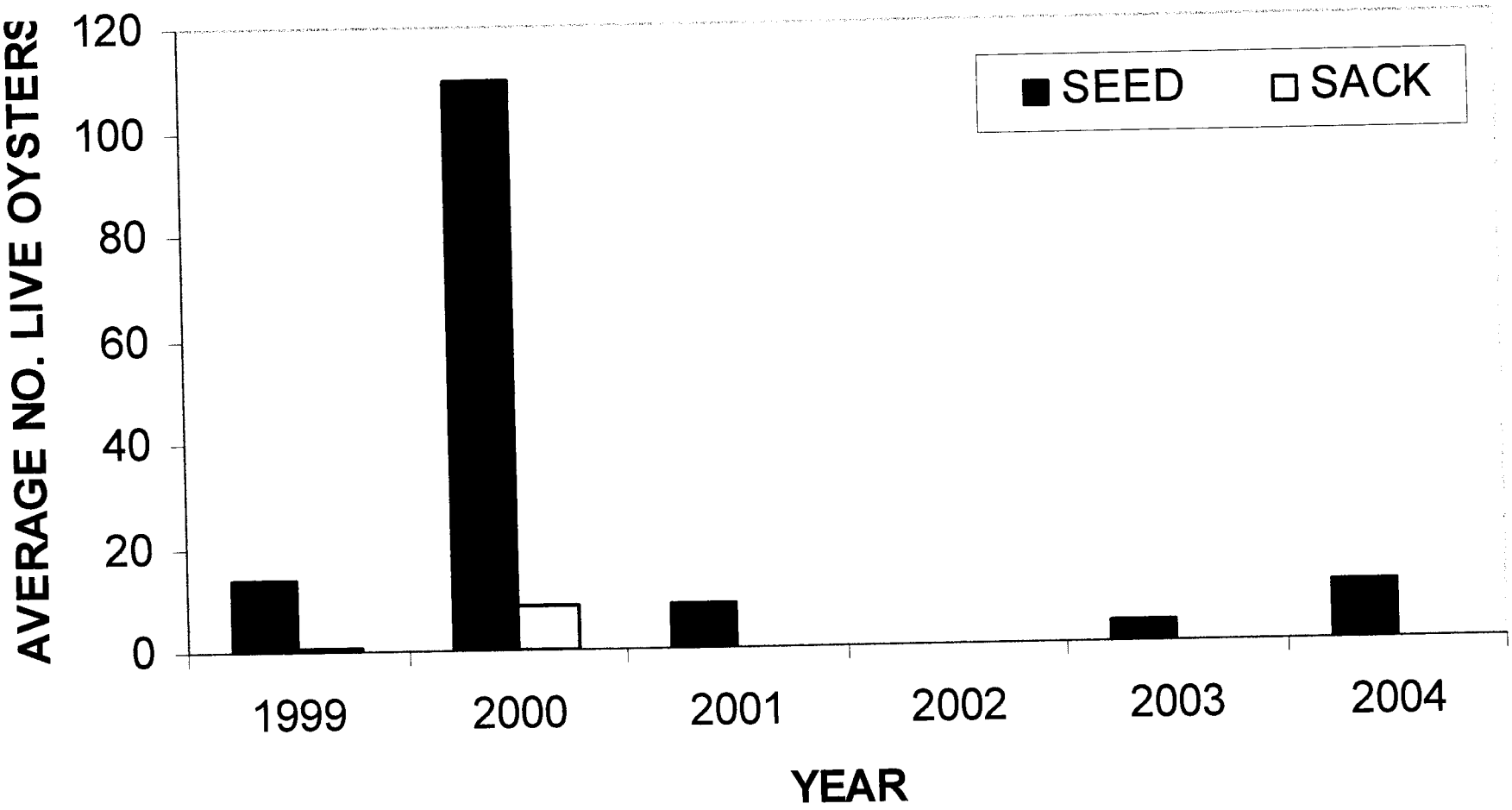


Figure 6.3. Average number of oysters per square meter at Indian Point (Station 003) in Coastal Study Area VI.

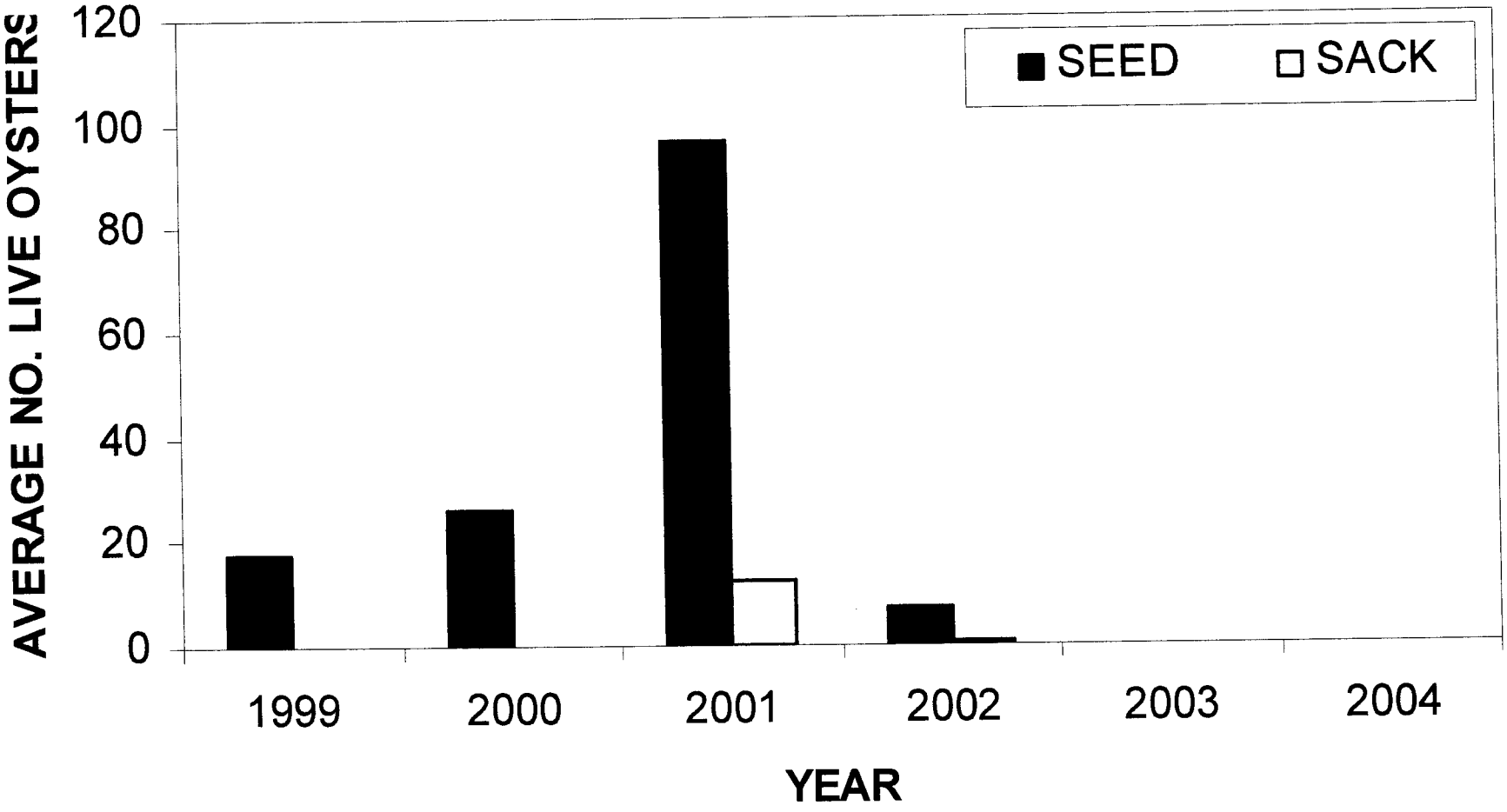


Figure 6.4. Average number of oysters per square meter at Dry Reef (Station 004) in Coastal Study Area VI.

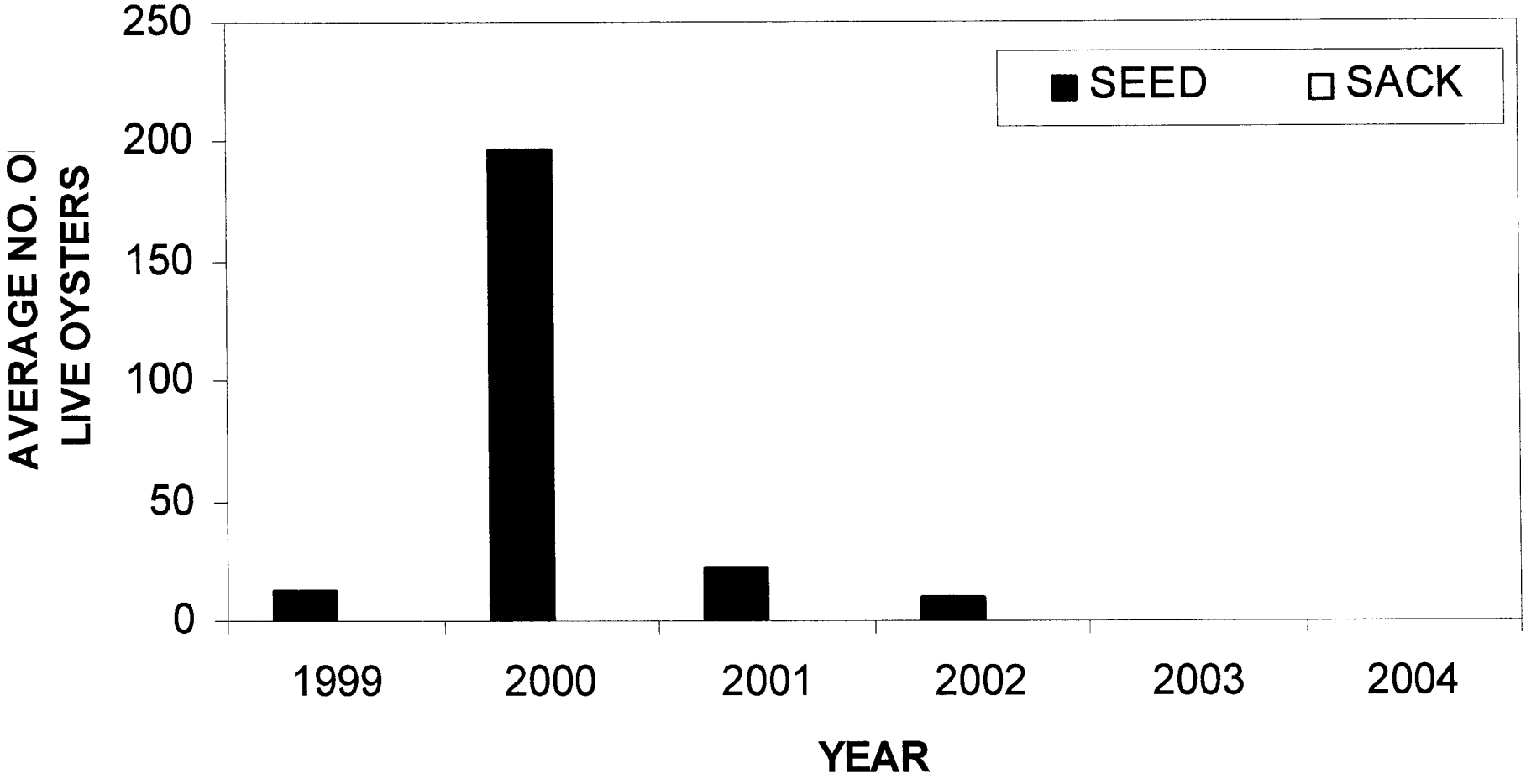


Figure 6.5. Average number of oysters per square meter at Bayou Blanc (Station 005) in Coastal Study Area VI.

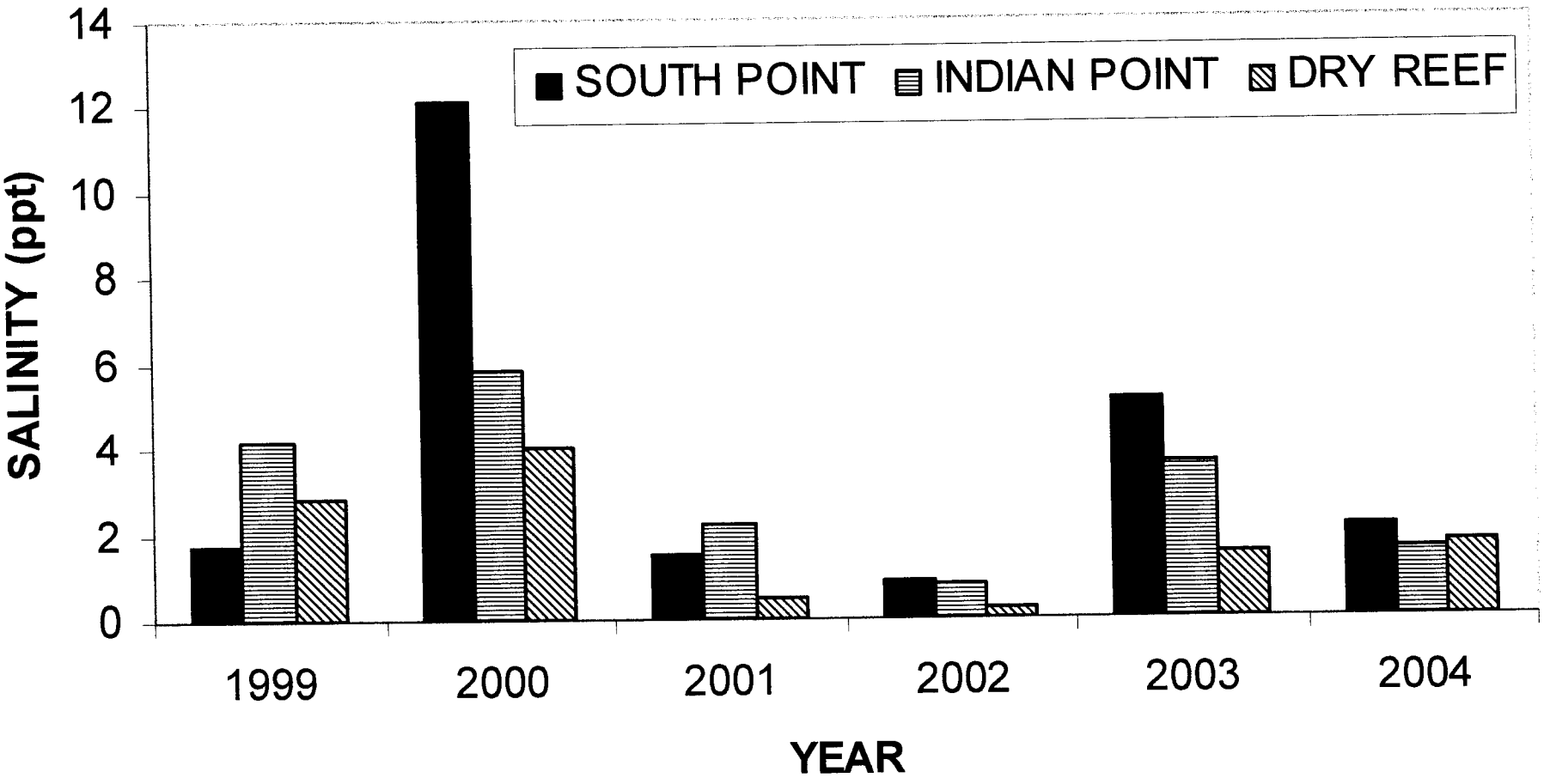


Figure 6.6. Average May salinities at South Point, Indian Point, and Dry Reef in Coastal Study Area VI.

CSA VII

State of Louisiana

Dwight Landreneau
Secretary

Department of Wildlife & Fisheries
1213 North Lakeshore Drive
Lake Charles, LA 70601
(337)491-2579

Kathleen Babineaux Blanco
Governor

MEMORANDUM

TO: PATRICK BANKS, BIOLOGIST SUPERVISOR

FROM: MICHAEL HARBISON, BIOLOGIST SUPERVISOR, CSA VII

DATE: JULY 7, 2004

SUBJECT: CAL. LAKE OYSTER STOCK ASSESSMENT AND 2004-05 SEASON RECOMMENDATION

OYSTER STOCK ASSESSMENT

Calcasieu Lake is divided into two conditionally managed areas by Dept. of Health and Hospitals (DHH): Lower Calcasieu Lake Conditionally Managed Area (LCCMA) and West Cove Conditionally Managed Area (WCCMA). All samples are taken from these two areas - three stations in each area.

Oyster square meter samples were taken June 29th. The samples indicated a slight decrease in marketable (> 3") oysters since last years survey. There was a substantial increase in the seed oysters (1 - 3"). This is due to the high recruitment seen during 2003. The marketable oyster's availability is 1,099,236 sacks; this is a decrease of 70,760 sacks from the 2003 assessment. The seed oyster availability is 1,369,323 sacks; this is an increase of 838,657 over the 2003 assessment; total sacks of oysters available are 2,468,560; this is an increase of 767,897 sacks over the 2003 assessment.

CALCASIEU LAKE OYSTER STOCK ASSESMENT

JUNE 2004

OYSTER NUMBERS

WEST COVE CMA

SIZE	STATION			AVE.
	4	5	6	
≥3″	15	16	47	10.5
1-<3″	52	46	98	32.7

CALCASIEU LAKE CMA

SIZE	STATION			AVE.
	1	2	3	
≥3″	87	37	133	42.8
1-<3″	211	156	243	101.7

OYSTER PRODUCTION AREA

WEST COVE CMA	CALCASIEU LAKE CMA
2,942,076.67 SQ. METERS	3,901,185.57 SQ. METERS

PRODUCTION OF ≥3″ OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	30,891,805.035	OYSTERS:	166,970,742.396
SACKS:	171,621.1	SACKS:	927,615.2
TOTAL SACKS OF ≥3″ OYSTERS:			1,099,236.3

PRODUCTION OF 1 - < 3″ OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	96,205,907.109	OYSTERS:	396,750,572.469
SACKS:	267,238.6	SACKS:	1,102,084.9
TOTAL SACKS OF 1-<3″ OYSTERS:			1,369,323.5

TOTAL PRODUCTION

TOTAL OVERALL POTENTAL OF OYSTERS (SACKS):	2,468,559.8

CALCASIEU LAKE OYSTER STOCK ASSESMENT

JULY 2003

OYSTER NUMBERS

WEST COVE CMA

SIZE	STATION			AVE.
	4	5	6	
≥3″	25	26	54	17.5
1-<3″	15	25	61	16.8

CALCASIEU LAKE CMA

SIZE	STATION			AVE.
	1	2	3	
≥3″	76	34	108	36.3
1-<3″	95	45	78	36.3

OYSTER PRODUCTION AREA

WEST COVE CMA	CALCASIEU LAKE CMA
2,942,076.67 SQ. METERS	3,901,185.57 SQ. METERS

PRODUCTION OF ≥3″ OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	68,986,341.73	OYSTERS:	141,613,036.19
SACKS:	383,257.5	SACKS:	786,739.1
TOTAL SACKS OF ≥3″ OYSTERS:			1,169,996.6

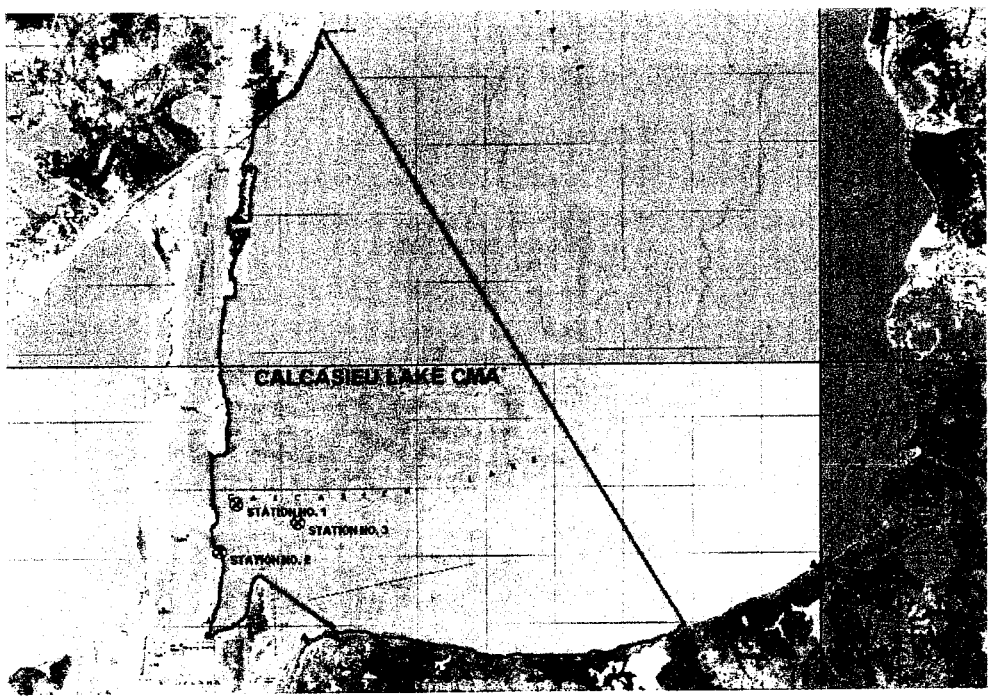
PRODUCTION OF 1 - < 3″ OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	49,426,888.06	OYSTERS:	141,613,036.19
SACKS:	137,296.9	SACKS:	393,369.5
TOTAL SACKS OF 1-<3″ OYSTERS:			530,666.4

TOTAL PRODUCTION

TOTAL OVERALL POTENTAL OF OYSTERS (SACKS):	1,700,663.0

CALCASIEU LAKE OYSTER AREAS 2004



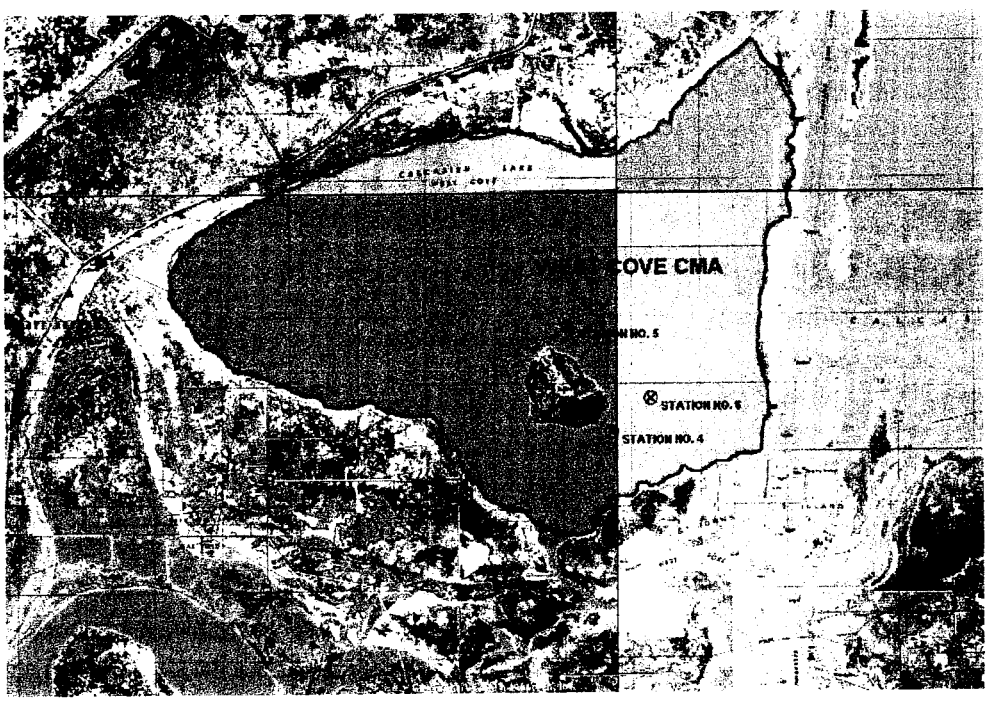


Table 7.1.

CALCASIEU LAKE OYSTER ASSESSMENTS AND HARVEST

SEASON	STOCK ASSESSMENT MARKETABLE	TOTAL	ESTIMATED SACKS HARVESTED
1963	-	-	210,160
1967-74	-	-	No commercial landings
1975-76	142,726	441,183	40,000
1976-77	694,420	869,475	100,000
1977-78	493,673	621,885	141,976
1978-79	-	-	75,000
1979-80	676,333	979,613	125,000
1980-81	355,664	705,117	150,000
1981-82	608,110	988,575	-
1982-83	-	-	50,000-75,000
1983-84	-	-	150,000
1984-85	125,407	644,788	-
1985-86	315,160	537,760	27,400
1986-87	589,940	1,217,959	200,000
1987-88	796,950	2,703,647	125,000
1988-89	463,331	1,036,580	50,000
1989-90	172,046	640,892	40,000
1990-91	408,961	1,268,962	50,000
1991-92	1,048,882	1,731,367	31,383
1992-93	749,915	1,612,736	27,328
1993-94	748,281	1,238,783	12,818
1994-95	756,525	1,246,480	6,134
1995-96	956,926	1,298,379	29,082
1996-97	618,767	1,083,866	43,441
1997-98	950,979	1,706,510	80,735
1998-99	702,371	1,160,115	39,202
1999-00	614,145	1,032,117	50,592
2000-01	846,176	1,197,311	35,881
2001-02	1,163,750	2,409,482	21,297
2002-03	781,676	1,100,257	21,386
2003-04	1,169,997	1,700,663	18,196

Table 7.2

2003 - 2004 CALCASIEU OYSTER SEASON SUMMARY

MONTH	CALCASIUE LAKE CMA DAYS OPEN	CALCASIUE LAKE CMA DAYS CLOSED	WEST COVE CMA DAYS OPEN	WEST COVE CMA DAYS CLOSED	OYSTER TAG SALES	SACKS LANDED
OCTOBER	17	0	17	0	2,000	2,458
NOVEMBER	30	0	28	2	2,000	2,247
DECEMBER	31	0	22	9	3,500	2,937
JANUARY	26	5	12	19	4,100	3,060
FEBRUARY	7	22	0	29	2,000	761
MARCH	31	0	19	12	4,200	4,277
APRIL	30	0	28	2	4,000	2,456
TOTALS	172	27	126	73	21,800	18,196

Table 7.3.

CALCASIEU LAKE OYSTER SEASON PERCENTAGE OF DAYS OPEN

SEASON	TOTAL DAYS	CALCASIEU LAKE CMA OPEN DAYS	CALCASIEU LAKE CMA PERCENTAG	WEST COVE CMA OPEN OPEN DAYS	WEST COVE CMA OPEN PERCENTAG
1991-92	199	114	57	114	57
1992-93*	165	137	83	76	46
1993-94	181	146	81	84	46
1994-95	181	90	50	9	5
1995-96	188	175	93	115	61
1996-97	197	149	76	114	58
1997-98	197	139	71	96	49
1998-99	197	135	69	120	61
1999-00	197	197	100	182	92
2000-01	198	180	95	106	53
2001-02	198	158	80	61	31
2002-03	198	146	74	66	33
2003-04	199	172	87	126	63

* 92-93 SEASON STARTED USING CALCASIEU RIVER GAUGE AT KINDER FOR DHH CLOSURES.

Table 7.4.

CALCASIEU LAKE OYSTER SEASONS

SEASON	REGULAR SEASON							EXTENDED SEASON							TOTAL DAYS IN SEASON
	DATES			DHH HEALTH CLOSURES				DATES			DHH HEALTH CLOSURES				
				CAL. L. CMA		WEST COVE CMA					CAL. L. CMA		WEST COVE CMA		
	OPEN DATE	CLOSED DATE	TOTAL DAYS	DAYS OPEN	DAYS CLOSED	DAYS OPEN	DAYS CLOSED	OPEN DATE	CLOSED DATE	TOTAL DAYS	DAYS OPEN	DAYS CLOSED	DAYS OPEN	DAYS CLOSED	
1989-90	11-15	3-15	121	79	42	79	42	3-16	4-30	46	40	6	40	6	165
1990-91	11-15	3-1	147	95	52	95	52	3-30	4-20	34	20	0	0	0	181
1991-92	10-15	3-1	139	69	70	69	70	3-2	4-30	60	45	15	15	15	199
1992-93[1]	10-15	3-1	138	123	15	76	62	3-8	4-3	27	14	13	13	27	165
1993-94	11-1	3-1	121	94	27	61	60	3-2	4-30	60	52	8	8	7	181
1994-95[2]	11-1	3-1	121	69	52	9	112	3-2	4-30	60	21	39	39	60	181
1995-96	10-16	3-1	138	125	13	80	58	3-2	3-31	30	30	0	0	0	-
								4-11	4-30	20	20	0	0	15	188
1996-97	10-16	5-1	197	149	48	83	114	-	-	-	-	-	-	-	197
1997-98	10-16	4-30	197	139	58	101	96	-	-	-	-	-	-	-	197
1998-99[3]	10-16	4-30	197	135	62	77	120	-	-	-	-	-	-	-	197
1999-00	10-16	4-30	197	197	0	182	15	-	-	-	-	-	-	-	197
2000-01	10-15	4-30	198	180	18	106	92	-	-	-	-	-	-	-	198
2001-02	10-15	4-30	198	158	40	61	137	-	-	-	-	-	-	-	198
2002-03	10-15	4-30	198	146	52	66	132	-	-	-	-	-	-	-	198
2003-04	10-15	4-30	199	172	27	126	73	-	-	-	-	-	-	-	199
2004-05															

1 - STARTING WITH THE 92-93 SEASON CALCASIEU LAKE WAS SPLIT INTO TWO UNITS: CAL. LAKE CMA (W/ RIVER STAGE CLOSURE @ 12 FT.) AND WEST COVE CMA (W/ RIVER STAGE CLOSURE @ 7 FT.).
2 - DHH CLOSED THE CAL. LAKE CMA (FROM 11/1-12/10/94) AND WEST COVE (FROM 11/1-1/28/95) WITH A PRECAUTIONARY (POSSIBLE LEAD CONTAMINATION) CLOSURE.
3 - DURING THIS SEASON THE RIVER LEVEL CRITERIA IN THE CAL. LAKE CMA CHANGED FROM 12 TO 13.5 FT.

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Table 7.5.

CALCASIEU LAKE OYSTER SEASON
AVERAGE NUMBER OF OYSTER FISHERMEN AND AVERAGE TAKE PER DAY

	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
AVE. NO. FISHERMEN/DAY	34.00	25.50	20.06	22.86	17.50	16.69	13.27			
TOTAL SACKS	80,735	39,202	50,592	35,881	21,297	21.386	18,196			
TOTAL DAYS	139	135	197	180	158	146	172			
AVE. SACKS/DAY	580.83	290.39	256.81	199.34	134.79	146.48	105.79			
AVE. SACKS/FISHERMEN/DAY	17.08	11.39	12.80	8.72	7.70	8.78	7.97			

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Dermo (*Perkinsus marinus*) Analysis

Levels of the oyster parasite, *Perkinsus marinus* in Louisiana oysters west of the Mississippi River, Summer 2004

by

Thomas M. Soniat, Ph.D.

18 July 2004

Among the most significant causes of oyster mortality is the parasite *Perkinsus marinus* (= *Dermocystidium marinum*), which is responsible for annual mortality rates that exceed 50% in most populations of adult eastern oysters, *Crassostrea virginica*. *Perkinsus marinus* was described in 1950 by John Mackin, Malcom Owen and Albert Collier as *Dermocystidium marinum* – hence the common name "Dermo" which is still in use (Mackin et al. 1950).

The discovery of the parasite was the result of investigations (funded by a consortium of oil companies and directed by Texas A&M University) of the impact of oil and gas activities on the Louisiana oyster industry (Mackin and Hopkins, 1962). Extensive studies were conducted on the effects of crude oil, bleedwater, natural gas, drilling mud and seismographic surveys. It was ultimately realized that none of these pollutants or activities could not explain the widespread mortalities of oysters that were observed. It is now known that the parasite is a major cause of mortality from Maine to Mexico (Soniat, 1996).

The main environmental factors which favor the proliferation of the parasite are high water temperatures and high salinities. Thus infections are more intense in the late summer and on the seaward side of estuaries. Management techniques to minimize disease and increase oyster harvest include moving infected oysters to lower salinity, early harvest of infected populations, and even freshwater diversion into high-salinity estuaries. The success of oyster farming often depends on the ability to manage oyster population in the presence of high levels of disease (Soniat and Kortright, 1998).

The standard assay for determining the level of parasitism is the fluid thioglycollate method (Ray, 1966). The length of ten oysters is measured and a small piece of tissue is removed and assayed for disease after incubation in fluid thioglycollate and antibiotics for one week. *P. marinus* intensity is scored using a 0-to-5 scale developed by Mackin (1962), where 0 is no

infection and 5 is an infection in which the oyster tissue is almost entirely obscured by the parasite. Calculations are made of percent infection (PI) and weighted incidence (WI), which is the sum of the disease code numbers divided by the total number of oysters in the sample. A WI of 1.5 could be considered a level at which disease-related mortalities are occurring. For example, Mackin (1962) claims: "a population of live oyster with a weighted incidence of 2.0 contains an intense epidemic, and more than half of the population may be in advanced stages of the disease, with all of the individuals infected."

Oysters for this summer's study were collected from 8 sites west of the Mississippi River. Two sites were in Sister Lake, two in Bay Junop , two in the Atchafalaya area, and two in Lake Calcasieu. The Sister Lake sites were Grand Pass (GP) and Old Camp (OC), the Bay Junop sites were Bayou DeWest (DW) and Buckskin Bayou (BS), the Atchafalaya sites were Indian Point (IP) and South Point (SP), and the Lake Calcasieu sites were Big Washout (BW) and Northeast Rabbit Island (NR).

Rectal tissue was removed from each of 10 oysters, incubated at room temperature in fluid thioglycollate for about a week, and assayed according to the standard Ray (1966) technique. The level of infection (disease code) was scored from 0 to 5, where 0 is no infection and 5 is near total coverage of the oyster tissue by the parasite. Weighted incidence (WI) was calculated by summing the disease code values and dividing by 10, the number of oysters in the sample.

WI values were 0.033 (GP), 0.066 (OC), 0.033 (DW), 0.000 (BS), 0.000 (IP), 0.000 (SP) 0.165 (BW) and 0.066 (NR). Salinities were relatively low this summer and this was reflected in lower levels of disease. The Lake Calcasieu sites typically have higher salinities than the other sites, but temperature and salinity data for that area was not provided.. The Lake Calcasieu sites had higher disease levels than the Sister Lake and Bay Junop sites. Atchafalaya sites had

extremely low salinities, small oysters and no disease (Table 1). Disease levels from the summer 2004 samples are relatively low and well below critical levels. Drought conditions have abated and this is reflected in the low levels of Dermo.

Table 1. Summary data and results from the 2004 Dermo study.

Station	Date sampled	Salinity (ppt)	Temperature (C)	Size range (mm)	Percent infection	Weighted incidence
Grand Pass	07/07/04	3.0	30.9	86-125	10%	0.033
Old Camp	07/07/04	7.1	31.6	89-109	20%	0.066
Bayou DeWest	07/07/04	12.5	30.8	92-105	10%	0.033
Buckskin Bayou	07/07/04	1.5	30.2	90-125	0%	0.000
Indian Point	06/30/04	0.9	29.1	52-75	0%	0.000
South Point	06/30/04	0.2	28.9	31-61	0%	0.000
Big Washout	06/30/04	*	*	82-112	50%	0.165
NE Rabbit Island	06/30/04	*	*	82-120	20%	0.066

* data not provided

Literature Cited

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2004 DERMO RESULTS
EAST OF RIVER & HACKBERRY BAY

Dr. John Supan
Louisiana State University

	Seed		Market	
	Prevalence	Weighted Incidence	Prevalence	Weighted Incidence
Bay Gardene	47%	0.2	27%	0.1
Lonesome I.	13%	0.2	63%	0.4
Mozambique Pt.	23%	0.1	38%	0.2
N. Black Bay	43%	0.2	68%	0.4
S. Black Bay	47%	0.2	27%	0.2
Bay Crabe	73%	0.5	66%	0.3
Telegraph Pt.	66%	0.3	53%	0.4
Cabbage Reef	27%	0.1	70%	0.7
Three Mile	17%	0.08	33%	0.2
Hackberry Bay	20%	0.1	40%	0.2

Mackin Scale (0-5) used to determine incidence.